

PD-ABR-562

102119

Morocco

Mid-Term Evaluation of the Morocco Agricultural Development Project of the Middle East Regional Cooperation Program

**Prepared for
U S Agency for International Development
Bureau for Global Programs, Field Support, and Research
Center for Human Capacity Development, Office of Policy Programs**

**Rodney J Fink, *Team Leader*
Mary Peet
David O'Brien
JoAnne Garbe**

**Winrock International, 1611 North Kent St., Arlington, VA 22209
March 1995**

MOROCCO PHOTO SUMMARY

Morocco Agricultural Development Project
of the Middle East Regional Cooperation Program (MERC)
(Morocco)

Prepared for
U.S. Agency for International Development
Bureau for Global Programs, Field Support and Research
Center for Human Capacity Development, Office of Policy Programs

by:

Rodney J. Fink

Submitted by:

WINROCK INTERNATIONAL
1611 N. Kent Street, Suite 600
Arlington, Va 22209-2134
Phone (703) 525-9430 Fax (703) 525-1744

March 1995

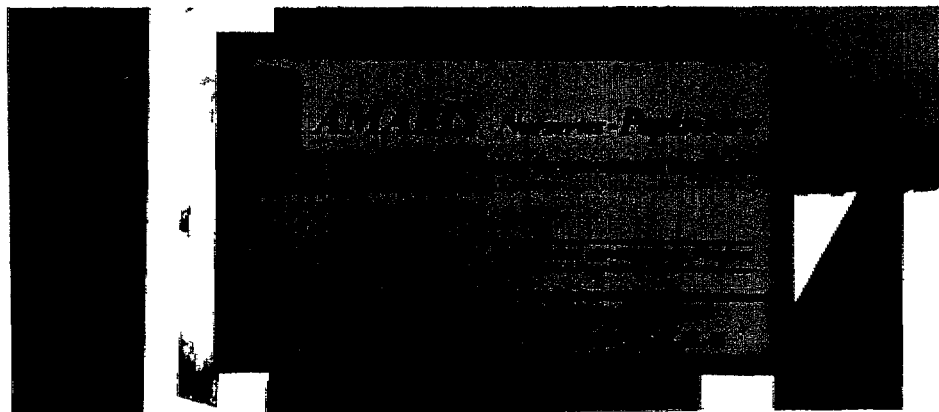
2

COOPERATION BETWEEN THE UNITED STATES, MOROCCO, AND ISRAEL

MIDDLE EAST REGIONAL COOPERATION (MERC) MOROCCAN COOPERATIVE AGRICULTURAL DEVELOPMENT PROJECT

The Moroccan Project is funded for \$4,939,000 over a five year period, ending in September of 1997. This was the first MERC project between Israel and an Arab country other than Egypt, and the first with a non-government cooperator. The Moroccan cooperator is an agribusiness company called the Maghreb Agricultural Company in Azemour, Morocco. The overall goal of the project is to strengthen institutional linkages between cooperating institutions of the two countries, to increase the agribusiness capability of Morocco, and to increase agribusiness exports from both Israel and Morocco. The lead institution is the San Diego State University Foundation, and Ben Gurion University of the Negev is the Israeli cooperator. The research and part of the demonstration work in Morocco will be centered at a 25 hectare site near Azemour, 45 miles south of Casablanca. Agreed research will be done by project participants in Israel and Morocco and results shared. Through the project, new technologies are being extended to Moroccan farmers, and agriculturalists will be exchanged between Israel and Morocco.

Project guidance is provided by a nine member Steering Committee consisting of three members from each country. Each country also has a Country Coordinator responsible for coordinating activities in his/her respective country. The Technical Committee, composed of scientists of each country, provides direction to the Steering Committee regarding technical activities of the project.



The **AMARIS NURSERY** sign at the entrance to the project site in Azemour, Morocco. The name AMARIS, stands for America, Morocco (Maroc in French) and Israel, the three cooperating partners in the project.

Research is being conducted in Israel to strengthen the activities in Morocco, as well as to support the development of Israeli agriculture. Research in Israel includes breeding of high quality tomatoes, micro-propagation of ornamental eucalyptus, development of verticordia as an ornamental plant, commercial production of truffffles, and economic and marketing studies.



Morocco Project Coordinator, Dr. Bonnie Stewart, and the Israeli Coordinator, Dr. Dov Pasternak, evaluate plant materials (lower left). Israeli scientists for the Morocco Project meet with the Project Evaluation Team (upper). Tomato research is a component of the Israeli research (lower right).

At the Azemour site, a transplant nursery has been installed for supplying seedlings to the region. Transplant nursery technology allows for optimal production from drip irrigation and a high rate of germination of expensive hybrid seeds. Planting of transplants one month later than direct field sowing reduces environmental stress on the plants and results in savings of water, fertilizer, herbicides, field preparation. Transplants also enable farmers to put produce on the market earlier. The nursery is specializing in the production of tomatoes, peppers, cucumbers, melons and other crops as identified. The activity is intended to influence the construction of similar nurseries in the country.



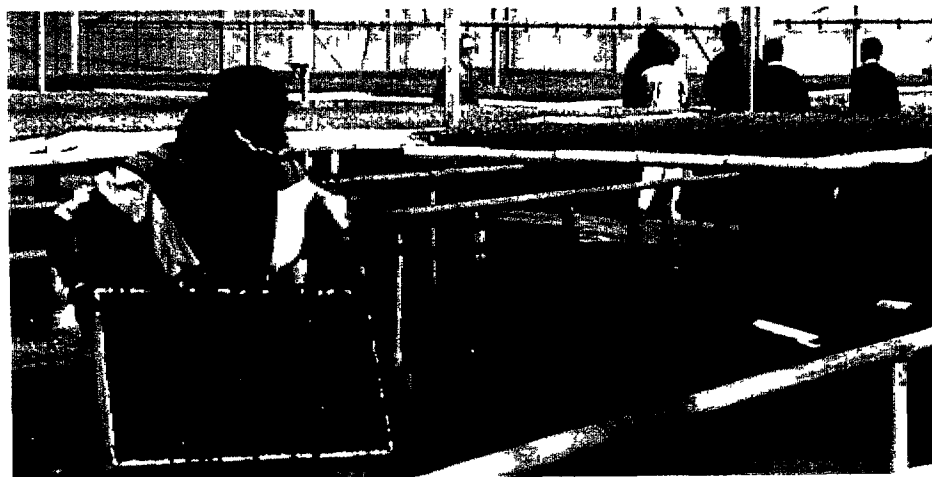
The President of the Maghreb Agriculture Company (Moroccan partner) Mr Driss Lahlou, and his son, Karim, (upper) One of the Moroccan members of the Technical Committee (left) visits with the on-site Israeli technical advisor, Mr Gadı Revat (center right) Technicians work with plants being produced in the transplant nursery (lower left)

At the Azemour site, two types of pot-plants (rooted seedlings and finished pot-plants) are being produced. In addition, the production of hardy, woody ornamentals such as eucalyptus, leptospermum sp and melaleuca sp will be evaluated for entry in local and export markets. Open field production will include experiments, demonstration, and application of modern technologies. Training and extension activities are to be carried out by a cadre of 10 to 15 Moroccan extension workers with the help of professionals from the Division of Horticulture of the Moroccan Ministry of Agriculture and from the Hassan II Institute of Agriculture in Agadir.



Collaborative activity for the domestication of desert truffles is planned jointly with Israeli (upper left, holding truffle) and Moroccan scientists from Hassan II Institute (upper right). The AMARIS Moroccan Farm Manager (left) discusses transplant nursery operation with a local farmer (second from right) and the two Israeli on-site advisors (Itzhak Ayalon on right was initial advisor, and Gad Revat, second from right, is current advisor).

Training of Moroccans abroad is a component of the training program. This training, primarily in Israel, is for extension workers and leading staff who need to refocus their efforts to meet project needs. Some on-the-job training has been provided at the project site and at Hassan II Institute.



Three technicians who work in the transplant nursery at the AMARIS site. Fatima Agdid, on the left, completed 10 months training in Israel and was a joint author of a research report (upper left). Workers potting plants in the pot-plant nursery (center). The transplant nursery operation is now selling transplants to satisfied customers (lower).

The project originally included a micro-propagation laboratory (tissue culture lab) to be established on the AMARIS site. Since other laboratories are available in the country, the future of this component of the project is on hold at this time.

Although not an original part of the project, a local oil source, the argan tree (Arganis spinosa) has been identified for possible collaborative research. The argan tree is native to the semidesert area of southwestern Morocco. The flesh of the plum-sized fruit is bitter, but the kernels in the pit-like center of the fruit have a high oil content with desirable properties. The oil is used by people of the region who also use the wood and feed the fruit to goats and camels. Seeds collected in Morocco were recently planted in the Ramat Negev Station and at 5 other Israeli sites. Work with Hassan II Institute is scheduled which possibly includes stationing a Hassan II scientist in the Negev for collaboration with the Israeli scientific team. The trees grow naturally in the southern part of Morocco, and roadside stands and markets sell the oil.



Argan trees grow naturally in the southern part of the country (upper). The oil is sold in roadside stands and in Agadir markets (lower).

CONTENTS

EXECUTIVE SUMMARY	7
PROJECT IDENTIFICATION DATA SHEET	11
I PROJECT BACKGROUND, PURPOSE, AND OBJECTIVES	12
<i>A Background</i>	12
<i>B Project Goals and Objectives</i>	12
II EVALUATION SCOPE OF WORK AND METHODOLOGY	13
<i>A Purpose of the Evaluation</i>	13
<i>B Literature Reviewed</i>	13
<i>C Interviews with U S Implementors</i>	14
<i>D Site Visits</i>	14
<i>E Interviews with Participants Implementors and Recipients</i>	14
<i>F Evaluation Team Composition</i>	14
III MEETING TECHNICAL SUBPROJECT OBJECTIVES	15
<i>A Overview</i>	15
<i>B Progress in Specific Subprojects Morocco</i>	15
<i>C Progress in Specific Subprojects Israel</i>	18
IV PROJECT MANAGEMENT	22
<i>A Management Problems</i>	22
<i>B Technical Reports</i>	24
<i>C Peer Review</i>	24
<i>D Fund Flow to Principal Investigators</i>	25
<i>E Steering Committee</i>	25
V COOPERATION BETWEEN INSTITUTIONS AND COUNTRIES	25
<i>A Collaboration</i>	25
<i>B Successful Aspects of the Project</i>	26
<i>C Less Successful Aspects of the Project</i>	26
<i>D Steering Committee Action</i>	27

VI ADDITIONAL FINDINGS AND CONCLUSIONS	27
<i>A Value of Internal Evaluations as a Management Tool</i>	27
<i>B Contributions of U S Consultants Serving on More than One SDSUF MERC Project Committee</i>	27
<i>C Value of Having Steering and Technical Committees as Compared with a One committee System</i>	27
<i>D Utilization of the Economic and Marketing Study</i>	28
<i>E Performance of Israeli Tomato Varieties in Morocco</i>	28
<i>F Value of the Chart Created to Track Project Progress</i>	28
<i>G Reasons for Delay in Building the Micro Propagation Laboratory</i>	29
<i>H Onion Research Termination</i>	29
<i>I Status of the Privately Owned Facility after Project Termination</i>	29
<i>J Effect of Unregulated Pumping of the Aquifer on the Project Site (Restrictions to an Expanding Greenhouse Industry Government Regulations Relocation of Project)</i>	30
<i>K Environmental Concerns about the Project</i>	31
<i>L Overseeing Activity of USAID Program Office</i>	31
VII CONCLUSIONS	32
VIII RECOMMENDATIONS	35
<i>A Transplant Nursery</i>	35
<i>B Micro-Propagation Laboratory</i>	36
<i>C Open field and Other Operations</i>	36
<i>D Israeli Advisor</i>	36
<i>E Management Conflict</i>	36
<i>F Property Rights and Copyright Questions</i>	37
<i>G In-Israel Training</i>	37
<i>H Truffles and Argan Work</i>	37
<i>I Revised Anticipated Project Completion Date</i>	37
IX LESSONS LEARNED	37
APPENDIXES	
<i>A Scope of Work</i>	39
<i>B Contacts Made During Evaluation of the Morocco Agricultural Development Project</i>	53
<i>C References Consulted During Evaluation of CALAR II Maryut II and Morocco Projects</i>	55
<i>D Morocco Agricultural Development Project Evaluation Schedule</i>	57
<i>E Message Exchange between Driss Lahlou of Maghreb Agriculture Company and SDSUF</i>	61
<i>F Tomato Data from Israeli Varieties Grown in Morocco</i>	72

GLOSSARY

AMARIS	French acronym for America, Morocco and Israel, the three cooperating Partners in the Morocco Project
OCA	Ouldja des Chtoukas at Azemour (site of Moroccan Agricultural Development Project)
SOW	Scope of Work
USAID	United States Agency for International Development
MERC	Middle East Regional Cooperation Program
MOA	Ministry of Agriculture
MAC	Maghreb Agriculture Company of the Kingdom of Morocco (Implementing partner of the Moroccan Agriculture Development Project)
CALAR II	Cooperative Arid Land Agriculture Research II Project
SDSUF	San Diego State University Foundation
MASHAV	Israel Ministry of Foreign Affairs
Maryut II	USAID funded Integrated Agricultural Development Project

EXECUTIVE SUMMARY

THE PROJECT

The Morocco Agricultural Development Project is the first project of the Middle East Regional Cooperation Program (MERC) between Israel and an Arab country other than Egypt. The 5-year project runs from Sept 1992 to Sept 1997, with approved funding of \$4,939,000. The overall goals of the project are to foster cooperation among Moroccan, Israeli, and U.S. scientists/technicians, to strengthen institutional linkages between the cooperating countries, to increase the ability of Morocco's agricultural sector to meet internal demands for agribusiness products, and to strengthen capabilities of both Israel and Morocco to export agribusiness products. Technical objectives in Morocco are 1) introduce modern technologies for plant propagation, 2) initiate a pot-plant nursery, 3) improve open-field production of tomatoes, 4) initiate open-field production of hardy ornamentals, 5) optimize open-field crop production, 6) expand existing agro-industries through the introduction of superior cultivars and new crops, and 7) train a cadre of crop production specialists. In Israel the objectives are 1) develop high yielding cultivars of open-field salad tomatoes, 2) develop high yielding, high-quality, hybrid onions for the onion processing industry, 3) propagate, by tissue culture, selected cultivars of woody ornamentals, 4) develop new hardy ornamental species for open-field production, and 5) undertake research to domesticate and produce Moroccan truffles. The project is unique in that the Moroccan partner is an agribusiness company, the Maghreb Agricultural Company in Azemour, Morocco.

The project contractor is the San Diego State University Foundation (SDSUF) under a cooperative grant from USAID with major sub-grants to Ben Gurion University of the Negev and the Maghreb Agricultural Company.

THE EVALUATION SCOPE

The scope of work calls for a team to evaluate three major areas of concern: 1) management, 2) cooperation, and 3) specific progress meeting the stated subproject objectives. The evaluation team consisted of an agronomist/research management specialist (team leader), a horticultural/protected agriculture expert, and two American Association for the Advancement of Science, Science and Engineering Diplomacy Fellows, assigned to USAID.

THE METHODOLOGY

The team carried out a review of project documents prior to leaving for the Middle East and interviewed representatives of Winrock International, SDSUF, and U S scientists involved with the project. The team leader interviewed personnel in the SDSUF home office and scientists at the University of California, Davis. Country coordinators were visited in Israel and in Morocco, and visits were made to all major sites where research or project operations were being conducted. Israeli scientists gave reports of their research and were interviewed about the project. In Morocco, the Azemour AMARIS site was visited, and those working or involved with the project were interviewed.

SUMMARY CONCLUSIONS

The research in Israel is meeting subproject objectives, with the possible exception of breeding processing tomatoes for Morocco. Collaborative areas (between Israeli and Moroccan scientists) have been identified, but little if any true collaboration is under way (research with argan and truffles has been identified). At the Azemour site, with Israeli technical assistance, as well as the assistance of U S scientists, greenhouses and the pot-plant nursery have been constructed as scheduled and pot-filling equipment has been installed. The nursery has started operating commercially. A good marketing program for customers of the nursery would help make this activity successful.

Scientists in Morocco (Hassan II Institute, Agadir) have been identified to collaborate with the tissue culture, truffles, and argan research projects. Plans are under way to fund portions of this collaboration. Training of Moroccans in Israel is taking place. Seven scientists and technicians have completed or commenced training, and more are being scheduled.

There have been many conflicts between collaborators in the project. The Maghreb Agriculture Company (MAC) has had difficulty providing satisfactory accounting procedures, resulting in lapses of funding until proper procedures were in place. The president of MAC recently threatened to terminate the project if MAC did not receive the full amount of the budget scheduled for all activities in Morocco (13% had remained with SDSUF for other components of the project to be completed in Morocco). Even though withholding the funds had been agreed upon earlier, the allocation was not fully understood by MAC. The president of MAC has questioned the competence of the technical advisor and alleged that he was involved in conflicting business activities. The president of MAC expressed concern about the advisor in October 1993 and again at the Steering Committee meeting a year

later when a decision was made to replace the advisor and also to hire a Moroccan farm manager

The project called for the construction of a micro-propagation laboratory (tissue culture laboratory), which in mid-1994 the Technical Committee voted unanimously to delete because there are other laboratories in the country. The Steering Committee, at the request of the president of MAC, reinstated the micro-propagation laboratory at the October 1994 meeting. The project proposal had stated that there were no commercial laboratories in the country, but this was incorrect. The Domaine Royal, the university, and national institutes had laboratories that combined research and commercial functions. Evaluation team inquiries revealed that as many as 10 commercial tissue culture laboratories exist in Morocco. Whether they were running at full capacity and whether they were producing high quality material could not be ascertained. Based on the high level of technical and administrative skill required to operate a tissue culture laboratory, the team questions the desirability of installing the laboratory at the Azemour site.

SDSUF has made a substantial effort to get the project on track. This has included special trips to set up accounting and auditing procedures, and solving other crises as they occur. Based on the many management questions and lack of progress toward a permanent solution to the problems, an early completion or termination of the project seems desirable.

Due to the management problems of MAC, disputes over the technical advisor, and the lack of involvement of Moroccan scientists and technicians, a mid-course adjustment of the project is advisable. The training, research collaboration, and the transplant nursery should be continued, but the planned tissue culture laboratory should be deleted. The anticipated completion date for the project should be no later than June 30, 1996.

SUMMARY RECOMMENDATIONS

The project scope of activity should be reduced and the date of completion be made sooner. Specific recommendations:

- 1 Due to the demonstrated success of the transplant nursery, the operational procedures should be refined and the facility brought to operational capacity.
- 2 At its own expense, the Maghreb Agricultural Company should engage a person trained in business or economics to develop a marketing plan for the AMARIS nurseries. The plan should cover provision of marketing services to customers as well as dissemination of information about the services available.

- 3 The micro-propagation laboratory (tissue-culture laboratory) should be deleted from the project
- 4 If there is additional contractual or management conflict between SDSUF and MAC, we recommend an immediate phase-down and termination of the project
- 5 Training of Moroccan technicians in Israel should continue, as should limited extension/demonstration work by the Israeli technical advisor
- 6 Work plans for truffles and argan research should be developed and funded (pending peer-approved proposals) Work should be collaborative, not parallel
- 7 The revised anticipated project completion date should be no later than June 30, 1996
- 8 If the project is modified and extended beyond the June 30, 1996, an external evaluation of the Morocco component should be conducted before granting final funding approval

MAIN LESSONS LEARNED

- 1 When initiating a project, full attention should be given to "red flags" that suggest that a cooperator may not be a good choice In this project several red flags were not heeded
- 2 Placing a large proportion of a project's resources with one private company is a high risk situation that should be avoided if possible Alternatively, safeguards and checks and balances should be built into the system If plans call for a future involvement of other institutions, the budget structure of a project should not in effect require the approval of a private company (which has different priorities and plans) to expend the funds
- 3 In future, building projects around a producers' group or cooperative whose members would have a vested interest in the success of the project, might be better A number of producers' groups already operate successfully in Morocco

PROJECT IDENTIFICATION DATA SHEET

Morocco Agricultural Development Project of the Middle East Regional Cooperation Program (MERC)

Project Number: 298-0158 28

Grant Agreement Dates 09/03/92 to 06/30/97

Life of Project Funding \$4,939,000

Project Activity Completion Date 6/30/97

Objectives. The goal of the project is to increase the ability of Morocco's agricultural sector to meet internal demands for agribusiness products, and to strengthen the capabilities of both Israel and Morocco to export agribusiness products. Broadened regional cooperation between Egypt and Arab neighbors is a major objective. Technical objectives relate to work in both Israel and in Morocco.

USAID Inputs: Professional, technical resource specialist, project administration, research operations, including equipment, supplies, and research facilities, and state-of-the-art technical information.

Anticipated Outputs: *In Morocco* Advanced plant propagation technologies for hybrid vegetables, a pot-plant industry for rooted seedlings, improved open-field tomato cultivars, open-field production of hardy ornamentals, diffusion of new technologies through trained specialists, increased export earnings. *In Israel* Development of better salad tomatoes, onions, onion hybrids for processing, tissue culture propagation of hardy ornamentals for export development, and research on domestication and production of truffles.

Required Reports: Quarterly reports, annual reports, technical/progress reports, semi-annual reports, and end-of-project reports. Financial quarterly reports, a) SDSUF administration, b) U S science cooperation, c) Moroccan sub-grant, and d) Israeli sub-grant).

Involved Institutional Contractors San Diego State University Foundation (Cooperative Agreement), Ben Gurion University of the Negev, and Maghreb Agricultural Company of the Kingdom of Morocco.

I. PROJECT BACKGROUND, PURPOSE, AND OBJECTIVES

Following the Camp David accords, a Congressional initiative took shape to support improvements in Egypt/Israel relations, and, perhaps later, to include other Arab countries. The Middle East Regional Cooperation Program (MERC) began in FY 79, and included \$5 million in the Foreign Aid Bill for FY 81.

A. Background

MERC projects are based on the premise that people who work together in a collaborative manner are more likely to reach their common goals while developing a better knowledge and understanding of each other and of their respective cultures and heritage. Participating country sectoral development programs, which bring together national expertise in a collaborative manner, are strengthened and enhanced by regional cooperation. Successful regional cooperation programs also help attract additional financial resources (public and private) for common economic or social development programs.

The Morocco Agricultural Development Project was the first MERC project between Israel and an Arab country, other than Egypt and the first with a private cooperator, the Maghreb Agricultural Company in Azemour, Morocco. The 5-year project runs from September 1992 to September 1997, with approved life of project funding of \$4,939,000. This mid-term evaluation will look at progress toward meeting technical objectives, at management, and at collaboration, as well as other specified activities. Special attention is to be given to the nature and extent of cooperation among scientists and countries.

B. Project Goals and Objectives

The overall goals of the project are to foster cooperation among Moroccan, Israeli, and U.S. scientists, to strengthen institutional linkages among the cooperating countries, to increase the ability of Morocco's agricultural sector to meet internal demands for agribusiness products, and to strengthen capabilities of both Israel and Morocco to export agribusiness products. Broadened regional cooperation will be a major objective. Technical objectives to be addressed for each country follow.

Morocco

1. Introduce up-to-date technologies for plant propagation as a means of improving vegetable yields and quality, as well as reducing the cost of propagating hybrid vegetable cultivars.
2. Initiate a sound pot-plant industry geared toward the export of rooted seedlings of foliage crops and a variety of finished pot-plants.

- 3 Improve open-field production of early tomatoes through the introduction of high yielding, high quality cultivars
- 4 Expand existing agro-industries through the introduction of superior cultivars and new crops
- 5 Initiate open-field production of hardy ornamental plants for the local and export market
- 6 Optimize open-field crop production through modern agro-management practices and irrigation technologies
- 7 Extend intensive crop production technology through a trained cadre of specialists

Israel

- 1 Develop high-yielding, high quality cultivars of open-field salad tomatoes
- 2 Develop high-yielding, high quality hybrid onion cultivars for the processing industry
- 3 Propagate, by tissue culture, selected cultivars of woody ornamentals for open-field production
- 4 Develop new hardy ornamental species for open-field production
- 5 Undertake research that leads to the domestication and intensive production of truffles

The main project site in Morocco will be the Ouldja des Chtoukas Azemour (OCA) pilot unit near Casablanca. An Israeli resident technical advisor will assist with the technical execution (selection of equipment, utilization of consultants, research development, training, demonstration, and extension) of the integrated project at the OCA site. The technician is to work in cooperation with the Moroccan farm manager and the chairman of the Technical Committee.

II. EVALUATION SCOPE OF WORK AND METHODOLOGY

A. Purpose of the Evaluation

This is a mid-term evaluation to determine if expected progress is being made toward the stated objectives of the subprojects, and whether or not annual work plans are realistic and successfully implemented. The two-committee system of management (Technical and Steering Committee) is to be analyzed and its cost-effectiveness determined (as compared with other systems of management). The evaluation team is to comment on the extent to which the subprojects are on track with original or approved plans to generate worthwhile technology by the end of the project (see Scope of Work, Appendix A).

B Literature Reviewed

Prior to departing for Israel and Egypt, the evaluation team met at the Winrock office in Arlington, Virginia, and reviewed appropriate

documents provided by Winrock and USAID. A listing of significant documents reviewed is summarized in Appendix C.

C Interviews with U.S. Implementors

The team met with the USAID Morocco project officer, other representatives of USAID, and Winrock personnel. The team leader interviewed officers of the SDSUF in their home offices and had personal or phone interviews with three U.S. Technical Committee members. Those interviewed are noted in Appendix B.

D. Site Visits

Israel Site visits were made to the Volcani Center and Ministry of Agriculture at Bet-Dagan, Ben Gurion University of the Negev, and The Institutes for Applied Research at Beer-Sheva, Ramat Negev Experimental Station (including Kibbutz Rivivim and Moshav Barnea), and a farmer using protected agriculture technology in the Arava Valley near the Jordan/Israel border south of the Dead Sea.

Morocco Site visits were made to OCA (AMARIS nurseries) near Casablanca, SASMA (a producers' organization) offices in Casablanca, USAID Mission in Rabat, science and technology advisor to the King in Rabat, producer sites near Casablanca, and limited visits to producers of argan near Agadir. Appendix B lists contacts made.

E. Interviews with Participants, Implementors, and Recipients

Scientists in Israel presented summary reports of their research, followed by questions from the evaluation team. When possible (about 60% of the time), two members of the team interviewed scientists about the non-technical components of the project (collaboration, success, interactions between scientists, and general program reactions). Country coordinators and Steering Committee members were interviewed as were others who had a significant role in the project. In Morocco, personnel of the AMARIS nurseries were present at the OCA site for briefing and questioning. Interviews were conducted with the president of the Morocco Agriculture Company (MAC), representatives of the USAID Agribusiness Marketing Investment Project, Manay Maroc (fiduciary agent), both Israeli technical advisors, and others listed in Appendix B.

F Evaluation Team Composition

The evaluation team consisted of the following personnel:

Dr. Rodney J. Fink, an agronomist/agricultural management specialist/team leader

Dr. Mary Peet, A professor of horticultural science at North Carolina State University/Protected Agriculture Expert

Dr. JoAnne Garbe, American Association for Advancement of Science, Science and Engineering Diplomacy Fellow, assigned to USAID, DVM and JD Degrees

Dr. David O'Brien, American Association for Advancement of Science, Science and Engineering Diplomacy Fellow, assigned to USAID, engineering/science specialist,

III. MEETING TECHNICAL SUBPROJECT OBJECTIVES

These findings are based on the following material: AMARIS Newsletters, 1993-1994 Annual Technical Report, handouts and presentations by Israeli scientists at the various institutes visited in Israel, and also at a special meeting with the Evaluation Committee in Tel Aviv, and Steering Committee minutes (October 1994) and Technical Committee minutes (June 1994)

A. Overview

Research conducted in Israel is proceeding well and has led to the generation of original and interesting results. Findings are applicable to Israeli agriculture. Correlation between research activities in Israel and work in Morocco is not high, however, correlation between work in Israel and the original Israeli subprojects is also low. For example, research on argan and on controlling transplant size and quality of tomato research have been added, but there has been no effort to breed processing tomatoes. The tomato breeding project under way is concerned with breeding a high-quality export tomato for greenhouse production in Israel, rather than with a processing variety for Morocco. The onion breeding project was discontinued. In summary, the Israeli research is of high quality and has significant potential importance for agriculture in Israel, the direct applicability to the AMARIS nursery is very limited at this time, however.

Israeli scientists in the Technical Committee meeting provided general consultations on greenhouse engineering and crop production. Based on the reports viewed, this expertise has been useful. They have recommended production practices, purchases of irrigation and other equipment, and cultivars to be grown, as have the U.S. members of the Technical Committee.

B. Progress in Specific Subprojects, Morocco

Transplant Nursery The project provided for the construction and operation of a transplant nursery for tomatoes, peppers, cucumbers, and melons for farmer use.

Commercial production in the transplant nursery began in June 1994. The nursery was originally only 1,000 m² but was expanded to 3,000 m² in May 1994. Production capacity is reported to be 0.3 million transplants/cycle (3, 4, or 6 weeks for melons, tomatoes, and peppers, respectively). Overall production in the transplant nursery appeared to be going well, although the greenhouse was only a third to a half full. It was not clear if this was due to technical problems or poor marketing, or if this was simply the low season for orders. There appeared to be a problem with the mix being used at the time of our visit as some of the mix ingredients had not been ordered. Normally transplants concentrate their roots around the outside of the transplant compartment (air pruning). The entire root ball can then be removed. Although growers were reportedly very satisfied with the quality of plants produced in the past, much of the soil mix and the roots were left behind when the plant was pulled out of the tray, reducing the advantage of this type of production. It should also be noted that the trays being used were purchased from an Israeli company not associated with the U.S. manufacturer of Speedling trays (Speedling is a U.S. registered trademark). Thus it is difficult to say if the production problems the evaluation team saw were the result of the mix, over watering, or the fact that the trays did not provide for the proper amount of aeration. We also heard reports that the tray-filling and seeding equipment did not function properly and that up to a third of the tray compartments had to be hand-seeded. Filling problems could not be confirmed by the team and, in any case, early production problems may well have been overcome. In summary, the transplant production house looked good and had adequate production capacity. Some questions were raised as to whether the potential capacity was being fully utilized.

Development of a Pot-Plant Nursery The main activity of the pot-plant nursery is the production of mother plants and rooted cuttings or other types of propagation materials. It is expected that the propagules will be sold to Moroccan nurseries once product activities are expanded. Samples of many finished pot-plants are currently on display and are being used for demonstrations to prospective clients visiting AMARIS. For example, 1,000 cuttings have been made including *Shefflera* and cultivars of *Ficus* and *Croton*. In February 1994, 1,000 peach plants were produced from seeds.

Development of a Commercial Micro-Propagation Laboratory for Production of Disease-Free Materials This facility, which was mainly intended for banana propagation, has yet not been built. The evaluation team received conflicting information about the need for more tissue culture plant material in Morocco. The Technical Committee had recommended that this unit not be put into operation.

because there was adequate capacity in Morocco to satisfy demand for tissue culture plants. This decision was reversed in October 1994 by the Steering Committee, which authorized the building of the unit. The reversal was based on the advice of the same two Moroccan members of the Technical Committee, Mr. Hammaoutou El Mekki and Mr. Allal Chibane, who had originally advised the Technical Committee against building the unit. The reason for this reversal can only be surmised. The Evaluation Committee was however, advised by the faculty member who operates the tissue culture research facility at Hassan II Institute that there were at least 10 tissue culture labs in Morocco. At least three of these produce bananas. The quality of currently available materials is not clear. We were unable to determine if existing laboratories were operating at capacity or if more production is needed. Members of the team were told that the production capacity in Morocco was only a third of the amount imported and that the quality of some Moroccan-grown materials was low.

Development of Optimum Cultural Practices for Open Field

Production of Ornamentals In June 1994, the Technical Committee recommended that open field production of ornamentals not be emphasized since there was little market in Morocco for ornamentals. Three cultivars of *Melaleuca* had been planted on 1 hectare in February 1994. Only a few rows of *Melaleuca* were viewed by the team. One introduction did not do well because of the high soil pH and calcareous soil reactions. The Technical Committee recommended application of magnesium chelate if problems continued. About 0.25 hectare of *Strelitzia* was planted in October 1993. No eucalyptus were planted.

Experiments and Demonstrations of All Parameters of Open Field and Greenhouse Production of Vegetables

Rick Jones of the University of California, Davis, visited the site and provided seeds and other materials for propagation of asparagus and raspberries. He also provided 40 tomato cultivars from California and supervised a 2-hectare planting. Other crops reportedly grown in open-field culture included melons (3 ha) and peppers. The tomato planting was done in June 1994. Ten red raspberry cultivars and one black raspberry line were established. The evaluation team visited in January 1994 and was only able to view the perennial vegetable plantings of asparagus and artichokes.

All vegetable production was in greenhouses owned by Maghreb Agricultural Company rather than those constructed as part of the project. Melons, cucumbers, and tomatoes were reportedly grown in the company's greenhouses and products sold in the local and export markets. At the time of the visit of the evaluation team, however, these greenhouses were not being used and were in poor repair in terms of

protection from insect entry and condition of the plastics. A crop had been planted in these houses in late summer, but was taken out in October because of the expense of irrigation and fertilization of the plants.

Training Extension Staff of Hassan II Institute and the National Institute of Agriculture at the Azemour Site: The Hassan II Institute pathologist has taken part in demonstrations at Azemour site and in diagnostic visits to AMARIS farms. Also a Hassan II scientist was identified as a collaborator for truffles work.

Staff at Agadir have been involved in trials of argan (*Arganus spinosa*), a potential new crop. The fruit of this tree produces an oil that could command a high price on the international market. Cultural practices, including the use of saline irrigation water, are being investigated in the research plots at Agadir. The trees grow freely in the southern part of the country and many roadside stands and markets sell the oil in season.

C. Progress in Specific Subprojects, Israel

Breeding High Quality, High Yielding Processing Tomatoes for Morocco Trials of processing tomato cultivars, mainly from California, have taken place at the AMARIS nursery under the supervision of Israeli scientists. No data from these trials were made available to the committee.

A goal of the tomato breeding project that is under way in Israel in conjunction with this project is to produce a fresh market tomato, but whether for open field or greenhouse cultivation is not clear. The lines seen at Ramet Negev were indeterminate lines for greenhouse production. The aims, as presented by the researcher involved, are to improve resistance to fusarium wilt race 2 and nematodes and to improve fruit quality in fresh market tomatoes.

The strategy is to introgress the excellent sugar/acid ratio and soluble solids content of a small-fruited (cherry) tomato into a larger fruited line. These lines were also provided saline irrigation. The team tasted some of these cherry tomatoes at Ramet Negev and found that the quality of the fruit was indeed excellent. Hybrids from the breeding work as well as commercial cultivars were reportedly tested during 1993 and 1994 in the main production areas of Israel and Morocco. Further tests are scheduled for 1995.

Development of Management Procedures for Onion Production Based on Plant Physiology and Nutritional Needs Originally, breeding efforts were focused on practices to increase pungency and solids of processing onions, but the emphasis has now shifted to fresh market onions. We were told that this program has been discontinued.

because the researcher did not submit reports in a timely manner. The actual breeding program is reportedly going well, but without a funding connection to this project.

Progress on the Effects of Environment and Seed Treatment on Growth and Germination of *Verticordia* for Flowering Branches and Pot Plants: The branches of *Verticordia* are not only decorative, but also have good shelf-life. The range of flower colors is very wide, including yellow, red, pink, and purple. *Verticordia* are also potential pot-plants but have not yet been introduced commercially in Europe.

About 50 species of *Verticordia* are indigenous to western Australia. Project personnel made two trips to Australia to collect promising material. Only one of the species collected on the first trip germinated, but all 10 from the second trip have been successfully propagated. Propagation is nevertheless the limiting step in *Verticordia* production. Seed germination is only 10% at best. New techniques for propagation from cuttings have been developed at the Desert Research Institute in Israel. Several types of rooting media and growth regulators have been tested. Rooting was completely successful with an IBA concentration of 3,000 ppm on two of the media used. The media were (in order of performance) 2/3 quartz sand and 1/3 peat moss, 1/3 quartz, 1/3 sandy loam, 1/3 peat moss, and pure dune sand. Nutrition of *Verticordia* was also studied because it is known to be very sensitive to high concentrations of various nutrients, especially phosphorus, and may also be sensitive to the composition of the nutrient formulation. Experiments will be conducted in the near future to determine if roots are mycorrhizal.

Progress with Truffle Collections for Morocco and Domestication of Truffles for Commercial Production: The desert truffle (*Terfezia boudieri*) enters into symbiotic relationship with annual *Helianthemum distaceae*. It is not cultivated commercially. It grows wild in the desert where it is collected and sold in the food markets. The flavor is not as intense as the French truffle, which can be used in small quantities for flavoring. Reportedly, in Morocco, desert truffle is used in lamb stew. The objective of this subproject is to determine whether *T. boudieri* can be cultivated on artificial substrate, reducing the price and presumably making export feasible. At current prices, an entrée of desert truffles would cost \$300.

As with many fruiting types of mushrooms, the desert truffle is not easy to work with. Spores were unavailable for the first 2 years of the project, until, in March 1994, a collecting trip was made to Morocco by Israeli scientists. Two sites were visited and several species of truffles were collected or bought from local merchants. Only one specimen was mature enough to be definitively identified as *T. boudieri*. Additional

truffles were later sent to Israel, but these turned out to be the wrong species

In Israel, spores from the one specimen collected in March were exposed to several hosts *Helianthemum ledifolium*, *Cistus incanus*, and *H sessuliflorum*. Mycorrhizal infections developed in 3 weeks on all plants, and fruiting bodies appeared by the second month after inoculation. Those on the perennial *C incanus* are still thriving after 8 months, but those associated with the annual species disappeared

A significant aspect of this research is the possibility for collaboration with a qualified mycologist, Dr M Achouri of the Institute Agronomique et Veterinaire Hassan II at Agadir. Dr Achouri studied mycorrhizal symbiosis at the University of Minnesota. Negotiations were under way at the time of the evaluation team visit to provide funding to Dr Achouri in support of this collaborative work. No work has yet taken place, no funds have been provided, and no work plans for Morocco involvement were available

Tissue Culture Studies on Eucalyptus and Banana at Ben Gurion University and Training of Moroccan Technicians Propagation of *Eucalyptus kruseana*, *E ficifolia*, *E torwood*, *E calophylla*, and *E prunosa* has been studied. *E kruseana* could be cultured either from explants taken from field-grown trees or from *in vitro* seedlings. Although some difficulties have been encountered in hardening the material produced from tissue culture, *E ficifolia* and *E calophyll* cultures could be established from *in vitro* seedlings and hardened successfully in the greenhouse. Shoot proliferation was not as rapid as desired, so work is continuing on improving shoot proliferation. *E torwood* and *E prunosa* were not successfully cultured. Depending on availability of material, other eucalyptus species may also be cultured

One engineer, Fatima Agdid, was trained for 7 months (Jan -July 1994) in the tissue culture facility run by David Mills at Ben Gurion University. Her project involved propagation of African violet, *Heliconia*, dracaena, *Curculigo* and amaryllis. She appears to be exceptionally able and her training, by all accounts, was highly successful. It resulted in a research report jointly published with David Mills. Since the micro-propagation laboratory has not been built, she has not had an opportunity to use her training. We were given various reports on her current status in Morocco. Mr Lahlou said he moved her to the ornamentals nursery since she had also received training for 3 months in Israel on ornamentals

Economic and Marketing Study The revised economic and marketing study on the crops and products of the project has been completed and is a useful document. It defines the profit potential for various enterprises and provides an analysis of the economic impact

that successful implementation of AMARIS nurseries' products and technologies could have to the region. There is little indication that the study is being used by project personnel for planning purposes, however.

Domestication of the Argan Tree as an Oil Crop (This was not one of the original subprojects, but was included in the presentations on the Morocco Project.) The argan tree is a member of the Sapotaceae family native to the semidesert areas of southwestern Morocco. The flesh of the plum-sized argan fruit is bitter, but the kernels in the pit-like center of the fruit have a high oil content. The oil has several desirable properties: high percentage of unsaturated fatty acids (up to 80%) and a rich flavor and aroma. This oil is used for cooking by people in the region, who also use the wood and feed the fruit to goats and camels. The tree is not cultivated, however, and natural stands are said to have been overexploited. One team member observed large numbers of natural stands growing in the southern part of the country. The oil is available in roadside stands and in the city markets (it was observed in the Berber market in Agadir).

Seeds collected in Morocco were recently planted in the Ramat Negev Station and at five other sites that differ in salinity, soil, temperature, and other environmental conditions. Highly productive plants with high oil content and tolerance to root diseases will be selected for vegetative propagation in plantations. Fruit yield, oil content, and time of blooming, ripening, and shedding will be noted in all trees. Floral biology and pollination requirements will be studied in depth in selected trees.

A further germplasm collection trip is scheduled for spring 1995, in collaboration with scientists of the Hassan II Institute at Agadir. Propagation is scheduled to take place at both Agadir and Beer-Sheva. A scientist from Hassan II Institute is reportedly scheduled to spend 8 months in Beer-Sheva to work on the existing trees in the Negev, in collaboration with the Israeli scientific team.

Use of Growth Regulators to Control Transplant Size in Tomatoes and Melons and Concentration of Tomato Fruitset and Harvest In the nursery, if transplants are ready for sale before they can be moved out of the greenhouse they may become "leggy" (tall and spindly). Commercially, growth regulators that inhibit elongation are then used on many types of transplants to hold the plants until they can be moved out of the greenhouse. In this research project, the effect of applying paclobutrazol sprays to the shoots of tomato seedlings at concentrations of 10, 20, and 40 ppm was compared with untreated controls and with transplants shaken to control growth. There was no difference in seedling growth between the three treatments, but paclobutrazol increased root size and earliness in flowering. This

treatment will be explored further to see if it is an effective means of concentrating fruit set and harvest in indeterminate tomato cultivars. The potential for use of paclobutrazol on melon seedlings will be also investigated next year.

IV. PROJECT MANAGEMENT

After experiencing success with the CALAR and Maryut II projects in Egypt, Ben Gurion University and SDSUF entered into a cooperative venture with the Maghreb Agriculture Company (MAC), a Moroccan private company. The contact with Driss Lahlou, president of MAC, was initially made (according to Mr. Lahlou) by a senior Israeli administrator, Mr. Itzhak Peretz, followed by a visit of Dr. Samuel Pohoryles. The SDSUF then prepared a proposal for a MERC project that was ultimately approved by USAID in 1992. Work started the same year. The life-of-project funding for the project is \$4,939,000 with completion scheduled for FY 97.

A. Management Problems

The contractor, SDSUF, and Maghreb Agriculture Company have had a series of management problems including the following (account provided by the SDSUF project coordinator):

September 1993 Problem in financial management that prompted the associate general manager for finance, the director of grants and contract administration, and the U.S. project director of SDSUF to travel to Morocco to process and review the business practices and reporting procedures of MAC and to provide guidance in the correct procedures for financial recording and reporting. Meetings were held with MAC staff and the president to review the situation and discuss practices for improvement of the procedures. Arrangements were made with a local accounting firm, AUDIGROUP, to conduct an audit for year one, and an audit schedule was planned. The president of MAC agreed and commissioned the firm to begin the audit. The report was to be completed by December 15, 1993.

October 1993 The president and accounting agent of MAC made a trip to SDSUF to discuss their concerns regarding the Israeli technical advisor (mainly technical competence, financial management, and conflicting business activities reportedly engaged in by the advisor).

The concerns raised by MAC about the technical advisor were discussed in detail at the 1993 Steering Committee meeting by the three project coordinators. All agreed on a working atmosphere of openness and cooperation. The disagreeing parties shook hands and agreed to work together.

December 1993 and January 1994 High winds damaged three greenhouses and caused crop loss, costing \$138,000. Financial management concerns were noted by SDSUF, which transferred cooperative agreement funds to cover expenses in December and January. The SDSUF notified MAC that no additional funds would be sent until the audit report (due Dec 15, 1993) was received.

April 1994 Financial management concerns prompted the SDSUF director of project management and the U.S. country coordinator to travel to Morocco to meet with AUDIGROUP to review their audit. SDSUF found the first report was incomplete and requested AUDIGROUP to do a 100% substance audit of MAC to verify that all reported expenditures were appropriate. Manay Maroc, a fiduciary agent, was contacted to begin managing the financial records, and all reporting and accounting responsibilities were transferred to the fiduciary.

August 1994 Because of financial management concerns, the SDSUF country coordinator made a follow-up trip to review the accounting system.

October 1994 Mr. Driss Lahlou, president of MAC, called off the Steering Committee meeting a week before it was to begin because he did not agree with the Technical Committee's unanimous recommendation to expand the transplant nursery production and to delete the micro-propagation laboratory from the project. (In cooperation with MOA personnel, he had prepared a report justifying the laboratory), because he was still concerned about the technical competence of the Israeli technical advisor, and because he was dissatisfied with the technical advisor's financial management and excessive commitments of time to outside activities. These items were placed on the Steering Committee agenda, which then met and reviewed the data. The committee re-instated the micro-propagation laboratory, agreed that the Israeli technical advisor would be replaced, and agreed that a Moroccan farm manager would be hired.

December 1994 Maghreb Agriculture Company declared a budget crisis and claimed it had not received the full amount budgeted for project activities in Morocco. The company wanted to discontinue the project if it did not receive all the funds it maintained were promised (\$299,650, Appendix E, page 6). As part of an exchange of communications on this issue with SDSUF, the president of MAC described the "terrible situation the project is in" and his concerns about the budget allocation (Appendix E, pages 10-11, Letter of 9 Jan 1995).

January 18, 1995 A member of SDSUF and a Morocco Steering Committee member from Israel met Driss Lahlou, president of MAC, in Paris to discuss the crisis and to reach agreement so that the current

year's contract could be signed (allowing money to flow to pay bills) The parties re-agreed to overall contract terms An agreement for the current budget year was enacted

January 30, 1995 A crisis developed between the parties because MAC failed to provide an automobile or transportation to the replacement agricultural technical advisor Ben-Gurion University has recalled the advisor to Israel until arrangements for him are made

In summary, throughout the life of the project, there have been conflicts among SDSUF, Ben Gurion University, and the Moroccan partner These have generally revolved around financial management and the role/capability of the Israeli technical advisor Fund flow has been slowed at times due to the failure of SDSUF and Maghreb Agriculture Company to agree on procedures SDSUF appropriately has withheld payment until satisfactory monitoring procedures were initiated Most recently (Oct 1994 to Jan 25, 1995), funds were not flowing to the project because the agreement between SDSUF and Maghreb Agriculture Company was not signed (signed on Jan 25, 1995) In addition to meetings of the steering and technical committees, SDSUF personnel made many trips to try to resolve the financial problems with the MAC Current reports are up to date and the annual reports do a thorough job of reporting on progress

B Technical Reports

Although the annual reports provide a good overview of technical progress, preparation of technical materials by the project personnel in Morocco has been very limited The president of MAC said that few, if any, printed materials were available summarizing yield results from the trials conducted on the AMARIS site The only publications of the Morocco country program appear to be the three general information newsletters (English & French) and the promotional brochure for the transplant nursery Fatima Agdid, a technician of the project, was a co-author of the annual report submitted by David Mills and Shvita Wenkart of Israel (Ms Agdid was a trainee for 10 months in Israel) The first newsletter was distributed to farmers

C. Peer Review

The external peer review panel, mandated in the cooperative agreement, was not functioning in Morocco Part of the reason was that none of the cooperative work with Moroccan scientists (truffles, argan, and tissue culture for example) has started The Moroccan scientist identified to work with the truffle program was concerned that he had not been contacted about funding or direction for the work There was a technical review of the project in 1994 (updated once) by a

Technical Committee member using a computer-generated form, which diagrammed the progress of tasks called for in the project. The Technical Committee was active in reviewing programs and planning work for the next year. U.S. Technical Committee members' assistance to the project, other than at annual meetings, varies from very little to substantial.

D Fund Flow to Principal Investigators

Fund flow to scientists in Israel took place as planned. No agreements with Moroccan scientists have advanced to the level of individual funding.

E Steering Committee

The Steering Committee has taken an active role in providing guidance and intervening on controversial topics (dissent over the micro-propagation laboratory and status of the technical advisor). Currently two members of the Steering Committee are from Morocco. If an addition is made to the Steering Committee, a representative of the Moroccan Government would be an appropriate choice.

V. COOPERATION BETWEEN INSTITUTIONS AND COUNTRIES

Although differences existed between personnel working on this project, the team found that Moroccans, at all levels, desired to work with Israelis. This feeling existed with government personnel, within the private sector, as well as with the science and technology advisor to the King. Both the private and public-sector entities contacted indicated a genuine desire to be involved in future projects. One producers' organization (SASMA) indicated a willingness to help in finding private-sector partners for future projects.

A. Collaboration

Two aspects of this project were unique. The research conducted was of an applied nature and the project depended on a private-sector partner (Maghreb Agriculture Company). Collaboration consisted of interaction between members of the Steering and Technical committees, interaction with the Israeli technical advisor, and contacts made with scientists from the MOA Hassan II Institute and other agencies. Additionally, 12 technical visits (scientists, technicians, and engineers) took place from October 1993 through September 1994 (eight by Israeli scientists traveling to Morocco, two by U.S. scientists traveling to Morocco, and two by Moroccan scientists/technicians traveling to Israel). There has been considerable travel by U.S. and

Israeli personnel to Morocco, but only minimal travel by Moroccan personnel to other countries

Two Moroccan technicians received training in Israel (7 to 10 months each), and seven other Moroccan technicians were trained on-site in Morocco. One Moroccan received marketing training in Israel. Both the Israelis and the Moroccans indicated that the training had been a beneficial aspect of the project. Seven Moroccans have either completed or commenced training in Israel as of Feb. 1, 1995.

Project plans called for direct collaboration between counterpart scientists in the development of argan and truffles as commercial crops. Plant materials were collected on both crops by Israeli scientists visiting Morocco. Budget allocations to date have not allowed further collaborative activities in these areas, nor have scientists collaborated to determine the priorities of research to be conducted.

B Successful Aspects of the Project

Significant cooperation has taken place between the resident Israeli technical advisor and the Moroccan farm technicians, resulting in the construction of a commercial transplant nursery. Although not working at full capacity, there is good potential for significant commercial production. The Technical Committee and technical advisory visits have given guidance to the project.

C. Less Successful Aspects of the Project

The management difficulties experienced throughout the life of this project have been of such significance that further collaborative activities are in jeopardy. Unresolved management problems have led to interruptions in the day-to-day operations of the farm in Morocco, resulting in periods of decreased on-site activity. The lack of an effective strategy, or desire, for resolution of disputes has created an atmosphere of bad faith among people who are supposed to be collaborating. The range of accusations is truly astonishing. These disputes are personal or professional, rather than national or of an ethnic nature, and should not affect future collaboration between Morocco and Israel.

Finally, due to all of the internal disputes in this project, support for potentially collaborative research, such as with truffles and argan, has not been forthcoming. The efforts spent keeping the project on track have also limited effective collaborative extension and applied research activities.

D Steering Committee Action

The Steering Committee, over the unanimous negative recommendation of the Technical Committee, intends to initiate a micro-propagation laboratory (an administratively and technically challenging venture) The evaluation team is concerned about the appropriateness of this activity, especially given the past inability of the parties in this project to resolve their differences It is also unclear whether more tissue-culture laboratories are needed in Morocco (The team received conflicting information on this issue)

VI. ADDITIONAL FINDINGS AND CONCLUSIONS

A. Value of Internal Evaluations as a Management Tool

The Technical Committee has evaluated progress at each meeting The Steering Committee operates independently, however, and they have rejected significant recommendations (such as deleting the micro-propagation laboratory)

B Contributions of U.S Consultants Serving on More than One SDSUF-MERC Project Committee

Eleven U S scientists serve on the three MERC Projects (CALAR II, Maryut II, Morocco) Three scientists serve on more than one project committee and two of them (both on two projects) have made major contributions beyond participation at the annual meetings The team feels that serving on more than one program is more of an asset than a liability at least to the extent that it may result in more efficient use of travel funds

C. Value of Having Steering and Technical Committees as Compared with a One-committee System

The Steering Committee has provided policy and management direction For example, the Steering Committee decided to hire a Moroccan for the position of director and also reversed the decision of the Technical Committee to delete the micro-propagation laboratory from the project The Technical Committee has provided a useful project evaluation process, and its recommendations have provided guidance to the project The two-committee system although in conflict over key issues seems to provide a system of checks and balances

Since the project is centered in Morocco and involves just one company, having two nine-person committees may be excessive A three-member Steering Committee (one member from each country), plus country coordinators, should be considered Likewise, the

Technical Committee could be reduced to six scientists (two from each country)

An alternative that might be less cumbersome to operate and also more effective would be to utilize a five- to seven-person committee with both technical and management members. At present, involvement of people from outside of Morocco is greater than the involvement of Moroccans (steering and technical committee members, visitors, scientists, etc.). Morocco has well-trained scientists (over 135 U.S. Ph.D.s in agriculture trained with USAID funding for Hassan II Institute members). Opportunity for one-on-one involvement of scientists (Israeli and Moroccan) should be a major component of this project and other projects of this type.

D Utilization of the Economic and Marketing Study

The Project's Economic and Marketing Study (third draft) is well-done and provides useful information for both the long-term and short-term impact of the project. The background information and economic projections of different enterprises provide good baseline information. The study looks at potential profits of different crop enterprises and evaluates various markets (European, Arab Maghreb Union, etc.). Although it also covers the economic impact the project could have on the Azemour area, there is little indication that the report is being used. Greater attention needs to be paid to the report and to the problems of marketing in order to operate the transplant nursery near its capacity. The transplant nursery needs to develop a marketing plan to sell more seedlings. The plan should include marketing advice to customers (the farmers who buy transplants).

E Performance of Israeli Tomato Varieties in Morocco

The U.S. project coordinator, the Israeli coordinator, and the president of Maghreb Agriculture Company were each asked about yields (in Morocco) of tomato varieties developed in Israel. The only information provided on the trials is in Appendix F. The team assumes that the tests were done but no yield information recorded. The president of Maghreb Agriculture Company felt that the Israeli advisor should have been conducting varietal/fertilization tests, etc., and expressed his disappointment that such information was not provided.

F Value of the Chart Created to Track Project Progress

The chart showing activities and progress for the project prepared by University of California, Davis, as a tool for project management and evaluation is useful in that it lists the tasks to be accomplished and provides a place to check when the task is completed. Tasks due in the

future are noted with the date of anticipated completion. It has been updated twice and has proven to be a useful tool for following up on project activity. There was no evidence, however, that it was being used by the people actually on site. The project coordinator referred to its usefulness for SDSUF in its monitoring activities.

G. Reasons for Delay in Building the Micro-Propagation Laboratory

Initially, the need to finance the rebuilding of greenhouses blown down by a windstorm postponed the building of the micro-propagation laboratory. When it became time to seriously consider building the micro-propagation laboratory, the Technical Committee recommended deleting the laboratory from the project. The value of another laboratory was questioned since several units were already functioning in the country. There were also doubts that farmers would pay more for disease-free cultivars. The Steering Committee later rejected the recommendation of the Technical Committee and decided to proceed with the facility. Their decision was based on new data presented by Moroccan members of the Technical Committee who attended the Steering Committee meeting.

The evaluation team found, based on interviews, that there are possibly 10 laboratories in Morocco, and not all are working to capacity. The quality of materials produced by the current facilities was questioned, further complicating the issue. Two Technical Committee members interviewed (one U.S. and one Israeli) felt that the Technical Committee's decision to delete the laboratory was correct. The confusion regarding the country's need for another tissue culture laboratory, combined with the history of management conflicts with the contractor and Maghreb Agriculture Company, influenced the evaluation team to recommend the deletion of the laboratory from the project.

H. Onion Research Termination

The termination of onion research showed that the Steering Committee could move rapidly when necessary. The question was resolved by the two committees without waiting for the annual committee meetings. The project coordinator simply did a phone survey followed by a fax vote. The reasons for terminating this particular project are not clear.

I. Status of the Privately Owned Facility after Project Termination

The transplant nursery has the potential to be a profitable enterprise. For maximum profit, the Maghreb Agriculture Company would have to do a good marketing job and provide customers with advice on what enterprises to be in. The management level observed currently offers

limited encouragement that the facility will offer effective extension use later on. With the technical advisor replaced, the conflict with the MAC president will be resolved, it is hoped, and the project will be on track to provide the services desired and needed.

Farmer and Extension Training The signed business plan calls for training to continue following project termination. The company could train people to do a better job of running their own production operations, generating a greater demand for more plants from the nurseries. However, the evaluation team doubts that will happen because the company has little financial incentive to do so. If this training were to be placed under the auspices of a group such as a producers' organization, which had a vested interest in the management, ownership, and output of the venture, a better chance of sustainability could be built into the project.

Continuation of Cooperation Between MAC, MOA, and Hassan II Institute The memorandum of agreement (Business Plan) between the Maghreb Agriculture Company and SDSUF commits MAC to outreach and research cooperation using company profits. The value of any outreach activity depends on the level of applied research conducted at the Azemour site, but the work the team viewed provided little to support extension activities. As the transplant nursery becomes more widely accepted and profitable, it could serve as a model for expansion in other parts of the country. In addition, the company could conduct applied research to support customers of the transplant nursery.

The project has established relationships with scientists of the MOA and the Hassan II Institute in Agadir for joint research and extension activities, although no formal agreements have been made. Scientists of the MOA serve on the project Technical Committee.

J. Effect of Unregulated Pumping of the Aquifer on the Project Site (Restrictions to an Expanding Greenhouse Industry, Government Regulations, Relocation of Project)

The team was unable to obtain sufficient information to shed much light on this topic (this summary is mainly for informational purposes). Depletion of aquifers is of concern throughout Morocco. The most immediate salt water intrusion problems appear to be concentrated in the coastal zone between Casablanca and Essaouira, an area that includes the Azemour site. Actual figures on watertable fluctuations and groundwater salinity are difficult to obtain. Numerous contacts in the public and private sectors, including the USAID Mission, indicated that the Administration Hydrologique is particularly

protective of its data for bureaucratic reasons and has been of minimal help in providing such information

According to Dr M'hamed Harafi of USAID/Morocco, the host country is taking steps to develop alternative sources of water for agriculture. Irrigation of 800,000 hectares is supported by over 30 major reservoirs and numerous smaller ones. Additional surface water sources and conservation measures are expected to raise the amount of irrigated land to 1.2 million hectares, out of the total 8 million hectares of agricultural land in the country.

Several sources indicated that the project could have been more appropriately located near Agadir where more intensive production occurs. One significant reason given for approving the location near Azemour was that the area has been economically depressed for many years, and it was hoped that an infusion of technical assistance would help improve the socio-economic status of the region.

Greenhouse facilities are expanding in Morocco. At this time, neither water problems nor government restraints are slowing the expansion. The current drought is increasing use of irrigation, thus placing a greater strain on the aquifer.

The president of MAC is considering expansion in the Agadir region. He feels there is demand for a transplant nursery in the Agadir region to serve the large number of operations already there. However, interviews indicated that five to six transplant nurseries are being established so the demand for additional nurseries may have been met.

K. Environmental Concerns about the Project

Based on the premise that protected agriculture will increase in the region (which is being driven by Government policies), the project has had neither a positive nor negative effect on the environment (other than water depletion as discussed above). As greenhouse operations in Morocco increase, however, the fertilizer and pesticide load on nearby land and water will increase. The environmental impact was difficult to evaluate due to lack of information available to us.

L. Overseeing Activity of USAID Program Office

For MERC, unlike programs operated out of a Mission, USAID has not been able to provide on-site supervision. MERC projects stand alone in the field and involve more than one country. Nevertheless, they should have some on-site overseeing activity by USAID to keep them on track and to direct mid-course adjustments in the project when necessary. Some alternatives for supervision:

- **On-site Supervision from Washington, D C** • If project office personnel made regular inspection trips (at least annually), the direction of each MERC project could be monitored and changes in direction implemented more easily. The presence of a project officer could help solve problems and facilitate changes in direction as needed.
- **Supervision by USAID Country Mission or Embassy Personnel:** Because of the multi-country nature of MERC projects, this is not a viable alternative as the presence of Mission and Embassy personnel in one country limits their monitoring role. Embassy personnel are often not qualified for project supervision and USAID Mission personnel have full portfolios, so this is probably not a good solution. Embassy and USAID Mission personnel could, however, provide useful assistance for evaluation teams. Their monitoring of in-country progress is helpful for overall evaluation and especially useful when MERC projects support mission priorities.
- **MERC Project Officer/Representative Stationed in the Middle East:** Placing a project officer in the field for oversight purposes could be a viable alternative, especially if the number of MERC projects increase. Conceivably, a USAID employee in the field could have MERC projects as part of the total assignment.

The on-site monitoring of MERC projects by USAID Washington would be a useful addition to MERC and would help insure that projects are meeting the overall program objectives. The utilization of a contractor to provide technical and management help, including on-site visits, is a positive step but does not eliminate the need for USAID MERC personnel to do at least some on-site monitoring.

VII. CONCLUSIONS

The transplant nursery has the potential for being commercially successful. Sales started in mid-94, and through December over \$68,000 worth of transplants had been sold. Seedlings are being sold to producers, and repeat customers are appearing to purchase more plants. The business should be developed so as to bring the facility to full capacity.

In order to continue serving farmers well, marketing expertise needs to be built into the program. Good marketing services for clients who buy seedlings from the nursery will increase their income, provide a multiplier effect, and help to insure that clients will return to purchase more seedlings.

The pot-plant nursery could operate at the current level, or be expanded, depending on the desires of MAC. Open-field production, at the time the evaluation team visited, was minimal. Plantings of

asparagus and artichoke were actually viewed, and a raspberry planting was indicated. Field plantings of Bird of Paradise and Melaleuca were viewed. Annual crops have been planted in season but commercial greenhouses on the site were empty. Training and extension are available through customers (word of mouth), Hassan II Institute at Agadir, and the Division of Horticulture in the Ministry of Agriculture. The project has high exposure through the Charge de Mission of the Royal Cabinet, the U S Embassy, and the USAID Mission in Morocco.

The management conflicts between the other partners and MAC have hampered progress. SDSUF has spent an inordinate amount of time, effort, and expense in an attempt to create a good working relationship which, to date, has not occurred. Conflicts between MAC and the technical advisor have slowed progress and funds have been frozen several times. When this has occurred, questions have arisen about whether the funds generated by the transplant nursery have been properly used.

Recently, the replacement Israeli technical advisor was called home because no vehicle was made available for him. Adjustments in management procedures to date have not reduced these disagreements. The most recent budget conflict centered around the awarding of the "originally agreed-upon" project budget to Morocco (whether the Morocco component was receiving its full budget as agreed upon in the original proposal). As of January 1, 1995, US\$1,322,486 had been officially disbursed to the private-sector Moroccan partner, Maghreb Agricultural Company. An additional \$1,147,514 is budgeted for future Morocco activities (including the micro-propagation laboratory).

Interviews with those associated with the project review raised more questions than they answered. Many people doubt that the project can meet all desired objectives and sustain itself. Different versions of the problems have been obtained from those involved with the project (including the two Israeli advisors, the president of MAC, members of the Steering Committee, Technical Committee members, and the SDSUF project manager). The Steering Committee and the Technical Committee did not agree on the importance of the micro-propagation nursery, an original component of the project. Even with the difficulties encountered, progress was made in the installation of the pot-filling machinery and the construction of greenhouses. Some useful programs for farmers and extension personnel have been conducted on the AMARIS site.

Because of personal disputes, conflicts regarding the technical advisor, financial management, and lack of involvement of Moroccan expertise, mid-course project adjustments are in order.

The evaluation team considered the following options for the future of the project

- 1 **Project Termination** The large number of problems that face the project and the limited involvement of Moroccan personnel in a collaborative relationship with Israeli counterparts make project termination a viable option. The assistance provided (greenhouses, automated pot-filling machine, etc.) leaves the Moroccan partner with valuable assets for his business. With minimal training for the new Moroccan farm manager, and with desire by MAC, this phase of the project could be productive.
- 2 **Completion of Project** SDSUF has made numerous (perhaps excessive) efforts to keep the project going and would like to continue it to completion (if not with the current partner, then with a new partner). The evaluation team does not recommend the expenditure for the micro-propagation laboratory for the reasons stated earlier. Redirecting the project to a new partner would potentially create problems of accountability and discord within the country. Thus it appears better to either terminate the project early, reduce the scope of the project, or begin with a new project. If a new partner is to be selected, we suggest involving a producers' group so that a number of growers would benefit from, and have a vested interest in, the project.
- 3 **Mid-term Adjustment:** By narrowing the scope of the project to the transplant nursery, the project could be completed on an accelerated time schedule, thus placing less funding at risk. The technical advisor could assist the Moroccan farm manager in bringing the transplant nursery to full capacity. In addition, the MAC could identify a person to market the program (and provide market information to customers) to help sustain the business. Under this option, collaborative work with argan and truffles could proceed, scheduled training in Israel could be continued, and the project could have a successful completion. The anticipated project completion date should be no later than June 30, 1996.

Other options for changing the direction of the project are conceivable. For example, develop truly collaborative research projects with reciprocal visits of scientists in the truffle, argan, and other areas to be identified. Under this option, peer review of proposed projects should be in place, and goals should be developed by collaboration between scientists. The staff of Hassan II Institute (Agadir) wishes to be involved. Another example would be to make an arrangement with MASHAV to provide cooperative training programs for farmers and technicians utilizing instruction by both Israeli and Moroccan scientists and technicians on a 50/50 basis. A series of training courses for farmers and technicians of the OCA region (perhaps three

or four courses in Israel in irrigation management or vegetable crop production) followed by two on-the-spot courses in Morocco to meet local needs could provide an interesting means of one-on-one collaboration on an extension/training program. Hassan II personnel and MASHAV personnel could collaborate to develop the curriculum, select the instructors, and plan the courses to meet the needs of the region. Such a program would need support from MASHAV, Morocco, and the Moroccan partner (possibly Hassan II Institute) and might be difficult to arrange in a short time-frame. These and other options are possible, however, the time, budget adjustments, and changing relationships involved in making such adjustments may make them unattractive. Thus, the evaluation team favors new project development rather than salvaging the remaining components of the existing project.

VIII. RECOMMENDATIONS

A. Transplant Nursery

Due to the demonstrated success of the transplant nursery, it is recommended that this phase of the work continue. The operational procedures of the nursery should be refined and efforts made to bring the nursery to full capacity. In addition, the marketing component (marketing the service and providing services to the customers) should be added to insure that clients know about AMARIS and also have good marketing information.

- 1 Maghreb Agricultural Company should engage, at their expense, one person trained in business and economics for the position of marketing director. This director should develop a marketing plan to promote the benefits of using transplants to producers who are potential customers.
- 2 Project resources should be utilized to enroll the marketing director in an expanded course in market development so he or she could better advise farmers doing business with the transplant nursery.
- 3 Maghreb Agriculture Company should consider developing a producers' organization around the transplant nursery. This organization could provide marketing and production services to members on a fee basis (or based a small percentage levy on produce sold).
- 4 Whenever possible, cooperation with the USAID-funded Agribusiness Marketing Investment Project should be encouraged and facilitated.

B. Micro-Propagation Laboratory

We recommend deletion of the micro-propagation laboratory from the project. Cancellation had been recommended by the Technical Committee. The motion to delete the laboratory was made by the Moroccan members of the committee, reportedly to support the establishment of a transplant nursery in another area of the country. The same members did further study and recommended to the Steering Committee that the laboratory be reinstated in the project plan, which it was. Our interviews with a Hassan II Institute scientist, who trained a project technician in tissue culture, revealed that 10 tissue culture laboratories exist in the country and another one would have little impact (that statement was later amended to indicate that the president of Maghreb Agriculture Company, who was present at the meeting, could probably make good use of the facility). The relatively high cost of the facility and the questionable impact it would have for the country or the success of the company, re-enforces this recommendation. Technically, operation of such a facility requires a high level of scientific expertise and management skill, as well as carefully timed purchases of supplies and equipment. Under the current management impasse, the long-term success of the laboratory seems doubtful.

C. Open-field and Other Operations

Support for open-field and greenhouse vegetables, pot-plant nurseries, and other phases of the project should be phased out. MAC could continue these components if it desires.

D. Israeli Advisor

The Israeli advisor should support and assist with farmer meetings and extension training activities. In addition to helping bring the transplant nursery to capacity, he could be profitably utilized in conducting training sessions for farmers and extension workers and in directing limited applied research/demonstration work.

E. Management Conflict

In the event there is an additional contractual or management conflict between the SDSUF and Maghreb Agricultural Company, we recommend an immediate and rapid project phase-down and termination. Although, conceptually, another private- or public-sector partner could be substituted for the remainder of the project, it is not recommended. Based on the problems of the current project, haste in selecting a partner could lead to another undesirable situation and strain relations with Moroccan entities.

F. Property Rights and Copyright Questions

The property rights and copyright questions associated with use of the "Speedling-like" trays, patented varieties, and the pot-filling equipment should be investigated by SDSUF

G. In-Israel Training

Training of Moroccan technicians scheduled to take place in Israel should be completed as scheduled

H. Truffles and Argan Work

If work plans can be generated for the truffle and argan projects (establishing purpose for the work and identification of truly collaborative efforts), these programs should continue

I Revised Anticipated Project Completion Date

Phase down should begin now with the project completion date revised to June 30, 1996 (possibly earlier)

IX. LESSONS LEARNED

According to some sources interviewed by the evaluation team, there were numerous "red flags" suggesting that the Moroccan cooperator might be a poor choice. In addition, the project allocated most of the Moroccan resources to the benefit of that cooperator, a private business. Stimulation of the Moroccan agribusiness sector is desirable, but placing so many resources in one company should be avoided when possible. The project to date has been short on Moroccan participation. Moroccan researchers have been identified, but little has been done to bring about their participation. The project might have involved a U.S. firm to help make the enterprise more aware of global business opportunities. The project is unique for MERC in that it includes Morocco and was a first attempt to involve the private sector. Other lessons

- Providing large amounts of support to one company is a high-risk situation, which should be avoided in similar projects. Relatively few checks and balances appear to have been written into the contract. Rather, all partners were assumed to be operating in good faith. In the future, using a producers' group or other private-sector group whose members would have a stake in the success of the project should be considered. Producers' organizations that provide services to members operate successfully in Morocco (an example, SASMA).

- In view of the high priority placed on cooperation and collaboration in MERC projects, projects with minimal collaboration should be rejected in favor of those with high levels of interaction between parties of the cooperating countries
- In MERC projects participation by the Arab country partner should be strong. When such participation is not insured in contracts to be awarded, other alternatives should be selected
- Contractors and USAID need to be able to say "no" to the continuation of projects that are not meeting desired objectives
- Contractors should communicate problems within projects to USAID so that surprises do not occur when a project goes poorly. The MERC project office should be involved in some on-site supervision to see that the work and cooperation is on track
- There is no substitute for good planning and structuring of a project

In retrospect, the SDSUF and Ben Gurion University should have acted more decisively and promptly to solve the problem between the president of MAC and the technical advisor. Much, if not all of the problem presumably was personality conflict and could have best been overcome by replacing the technical advisor earlier. Any conflict that gets in the way of promoting collaboration and cooperation of MERC programs should be resolved quickly so that the MERC objectives can be met. Regional cooperation is an integral feature of MERC activities, and when such cooperation is impeded (or not taking place), corrections need to be made. Future MERC programs should bear in mind the paramount importance of regional cooperation and collaboration, and recognize that obstacles to this process weaken (or destroy) the prospects for program success.

APPENDIX A: Scope of Work

Project Evaluations For

**Cooperative Arid Lands Agricultural Research Project
Maryut Integrated Agroindustrial Complex Project
Moroccan Cooperative Agricultural Development Project**

Scope of Work

Context of these projects and evaluations

The goal of the MERC program is to promote peace between Israel and its Arab neighbors and to facilitate development that will improve the well being of the people

The premise of the MERC program is that people who work together in a truly collaborative manner to solve common problems or to develop shared opportunities substantially enhance their knowledge and understanding of each other, of their respective cultures and heritages, and their common goals and aspirations

A further premise of the MERC program is that participating country sectoral development programs are strengthened and enhanced by regional cooperation projects which bring together national experts and expertise in collaborative technological or scientific efforts focused on common economic or social development priorities. A corollary is that if successful, regional cooperation projects can help attract additional financial resources, public and/or private, to common economic or social development programs

Projects supported by the MERC program, the results produced by those projects, and those participating in them are likely to become important examples and focal points for the development and spread of further mutual understanding to colleagues within participating institutions and nations, and to other entities within the region

Active, focused, and broadly based regional cooperation among the countries of the Middle East is, therefore, the fundamental goal of the MERC program. Thus defined, regional cooperation is the principal goal of MERC projects and cooperation is an integral feature or characteristic of all stages of MERC project activities, from conceptualization and planning through implementation to completion

Section one: Activities to be evaluated

Three projects will be evaluated by one team. This unusual practice is justified by the following similarities among the three projects:

- 1) All three projects are MERC initiatives, thus intended to promote regional cooperation between Israel and her Arab neighbors through specific project level collaborative activities
- 2) All three projects have the same US cooperator - San Diego State University Foundation, (SDSUF)
- 3) All have the same Israeli cooperator, Ben Gurion University, and the same principal investigators
- 4) Protected agriculture in an arid environment is a main component of each project
- 5) The goal of each project is to develop export quality horticultural products for the winter European market

For these reasons and to reduce the cost of evaluation, the three evaluations will be done at the same time by the same team.

The three projects are:

- 1) Cooperative Arid Lands Agricultural Research, (CALAR II)
- 2) Maryut Integrated Agroindustrial Complex, (Maryut II)
- 3) Moroccan Cooperative Agricultural Development, (Morocco)

Section two Purpose of Evaluations

This is the mid-term evaluation of the Maryut II and the Morocco projects, and the final evaluation of CALAR II. The purpose of these evaluations is to determine whether or not significant progress is being made, compared to that expected, toward the stated objectives of the subprojects, and whether or not annual work plans were realistic and successfully implemented. It is also important to analyze the Steering Committee/Technical Committee method of management, to determine to what extent the two committees reviewed work under way, revised the annual work plans relative to success of specific activities, and whether or not it is cost effective to support two committees. Since there is a Congressional mandate for the MERC program to foster cooperation and collaboration between Israel and Egypt/Morocco, specific attention is to be given to determining the nature and extent of this cooperation, and whether project activities are conducted in parallel or are truly collaborative.

The team is to comment on the extent to which the subprojects of the Maryut and Morocco projects are on track with original or approved plans to generate worthwhile technology, have the potential for generating technology by the end of the project, or would benefit from restructuring.

Project One

The Cooperative Arid Lands Agricultural Research Project

Background of CALAR II

In 1980, the governments of Israel and Egypt expressed common interests in arid land agriculture and executed agreements to that affect. The CALAR project was initiated in March, 1982. It was funded for 5 years at a level of \$5,000,000 and was eventually extended, for a total of 8 years. There were three main research activities:

- The use of saline water to produce crops in arid environments,
- Improving the production of small ruminant animals (sheep and goats) in desert environments,
- Trials of plant species not native to the two countries, which might have promise as commercial or forage crops, or for production of industrial raw materials.

The final evaluation of the first CALAR project in 1988, indicated that cooperation among the scientists of the two countries had been successful. There was also established friendly policy and administrative coordination among the trinational entities. In meetings to develop CALAR-II, the parties agreed to concentrate on protected agriculture and phase out the small ruminant activities.

CALAR-II is funded under the Middle East Regional Cooperation Program. The overall goals of the CALAR-II project are to foster cooperation among Egyptian, Israeli, and U.S. scientists, to strengthen institutional linkages among the cooperating countries, and to focus on problems of protected agriculture in arid lands, concentrating on crops and technologies of significance to Israel and its Arab neighbors.

The overall objectives of this multi-disciplinary program are:

1. Development of protected agriculture as a means to produce competitive export products, as well as for providing food for domestic consumption.
2. Expanding cooperative applied research efforts between Egypt and Israel.
3. Improvements of the socioeconomic status of farmers and growers in the participating nations.
4. The development of new productive lands in Egypt and the preservation of the fragile ecosystems in those lands.

Six major research activities were initiated in Egypt and Israel to address the above overall objectives. The crops to be studied are those that are now

in demand in the local and export markets and the crops that are now being grown in protected agriculture in the two countries. In addition, the project will identify and study new crops with high potential and high profitability. The titles of the subprojects to be evaluated and the objectives of these activities follow

1) Agromanagement

The objective is to conduct research on the following components of protected agriculture

- a Conduct research on the use of artificial root-growth substrates relative to crops grown in protected environments,
- b Study the optimal planting dates for each crop under conditions prevalent in the program,
- c Research the optimal methods of intensive cultivation such as the manipulation of plant architecture and plant density as a means to increase yield of high quality melons,
- d Study various combinations of irrigation and fertilizer application for optimal growth,
- e Conduct research on reducing the reliance on chemicals for disease and pest control, and
- f Utilize computer-aided techniques in gathering and assessing the data required by CALAR II researchers

2) Environmental modifications

The objective is to study various methods of heating, cooling, ventilating, shading, and using CO₂ enrichment to optimize crop production and quality in protected agriculture

Research is to

- a Study the ways and combinations of ways that environmental variables (heating, cooling, ventilation, carbon-dioxide enrichment, and shading) can affect plant growth, and
- b Study the use of unconventional heat sources for protected environments such as geothermal water, waste water from power plants and various water sleeves

3) Structure Selection

The design, construction material, and selection of optimal structures for selected crops at the most favorable cost will be studied

- a Study the use of inexpensive solar greenhouses, film plastic, and flexible P V C sheets, and
- b Conduct studies on various shading levels and its effect on heat levels in the greenhouses and on fruit quality

4) Genetic modification

The objective is to breed plants to be grown in protected environments with the following traits

- a The development of salt and heat/cold tolerant cultivars,
- b The improvement of the quality of selected vegetable, fruit, and ornamental species for the export market,
- c The introduction of insect and disease tolerance, and
- d The extension of shelf life and keeping quality

5) Post-harvest aspects

The objective is to study optimal harvest dates, cooling, methods to extend shelf life, packaging, controlled storage, and marketing and economic assessment. Specifically, research will center on the following topics

- a The optimal season for markets, both domestic and for export,
- b The volume of the existing market and forecast of potential markets,
- c An estimation of production costs, market price, and profitability of the various production systems,
- d Studies of product handling to aid in extending shelf life, and
- e Studies on harvest dates and relevant environmental control for storage and shipping

6) Floriculture and new crops

The objective is to develop new, high-value crops for the export market, using techniques that are suitable and cost-effective for farmers in Egypt and Israel. Examples of studies to be conducted are

- a Collection and domestication of arid plants with a high export value, and
- b Studies of ornamental plants of known export value in both protected and open-field conditions

Project Number 398-0158 03

Grant Number ANE-0158-G-00-0017-00

LOP Funding \$6,300,000

Project Dates

Grant Agreement May 30, 1990

PACD March 26, 1995

Project Two

The Maryut Integrated Agroindustrial Complex Project, (Maryut II)

Background of Maryut II

The **Maryut I** project was initiated to develop technology useful to the agricultural graduates that were given land to farm in the newly settled western desert. During this first phase, much of the physical structures at

the Maryut site were constructed including the office, packing and grading sheds, irrigation systems and greenhouses. Israel had found interesting differences in saline tolerance in cultivars of melon. The Maryut II was approved to allow the project to refine the crop management recommendations, to finish the training and extension facilities at Maryut, to prepare extension material and to train extension workers, and to increase the nursery capability to supply farmers with planting material.

Maryut II is funded by the Middle East Regional Cooperation Program. The overall goals of the project are to promote the spirit of cooperation between Israeli and Egyptian scientists, to strengthen institutional linkages among the cooperating countries, to develop technologies, cultivars and methodologies for intensive agricultural production in Egypt's western desert, and to develop farm settlement models geared for the needs and capabilities of university graduates and farmers who will settle these lands. In order to reach these goals, the project will assist in the development of the agro-industry in the newly reclaimed lands and will develop the Maryut site as a center for technology generation and dissemination and as a center for training and extension.

The program in Egypt has six major topics, with one or more specific objectives under each topic, and the program in Israel has nine activities. Research in these topics will be conducted in collaboration, in parallel, or addressed separately in Egypt and Israel. Results are shared among all participants.

The topics in Egypt and the objectives of these topics are

A. Protected Agriculture

- 1 Various greenhouse structures and coverings will be tested, including glasshouses, plastic covers, and screen houses,
- 2 All aspects of crop management systems will be tested for selected crops, from land preparation to post harvest treatment, and recommendations for optimal production developed, and
- 3 Crops and cultivars of vegetables, fruits and ornamental will be tested in non-heated greenhouses, tunnels, under shade, and with saline water to develop quality produce for the local and export markets

B Open Field Intensive Crop Research

- 4 The objective includes extensive varietal testing of ornamentals, flowers, and vegetable crops such as asparagus, lettuce, sweet corn, and processing tomato

C. Tree crops and Grape Research

5 Research will concentrate on developing and extending new varieties of deciduous tree crops that are compatible with warm winters and calcareous soils

D. Nursery

6 A nursery will be established near the main desert highway connecting Cairo and Alexandria to supply farmers with quality plant material that will be the basis of modern intensive agriculture in the Western Desert

E. Post-harvest Handling

7 Research will deal with

- optimal harvest time,
- ripening stages,
- sorting and grading,
- preservation treatments to extend shelf life, and
- packing methods and testing of packing materials

F. Training and Extension

8 The objective is to develop a center for training of extension workers and farmers and to design and distribute technical publications

The topics in Israel and the objectives are

A. Development of new cut flowers for winter marketing

1 Increase the flexibility in changing species and cultivars of cut flowers for export. This will assist the horticultural industry in the Negev and Maryut

B. Native annual plants for environmental gardening

2 The botanical and horticultural characteristics of Israeli annual flora will be studied to develop them for commercial use in Israel and the Maryut site. The saving of irrigation water is the principal interest

C. Development of woody plants as cut flowers

3 Studies include crop selection and ways to reduce the intensive culture, high level of expertise, and high costs generally associated with woody plants grown for cut flowers

D. Eucalyptus for flowering and decorative branches.

4 Research will address propagation, dwarfing, salt tolerance, reduced intensifies, and open field plantings

E. Control of tomato quality

5 This research will seek to establish correlation between growing conditions, physical and chemical parameters, and organoleptic guidelines

F Protected agriculture

6 Various greenhouse structures and covering will be tested to find ways to produce crops at the most desirable economic period for off season crops, and

7 Research will concentrate on optimization of management systems for melons and tomatoes for optimal fruit quality

G. Open field intensive crop research

8 This research will center on flowers from seed, hardy woody ornamentals, and potatoes and melons grown on sandy soils with saline drip irrigation

H Tree crops and grape research

9 Research efforts will include the selection of salt tolerant cultivars that are compatible with warm winters and calcareous soils

I Post-harvest handling

10 Research will deal with fruit acidity, pH, starch content, shelf life, and economic evaluation of quality control

Project Three

The Moroccan Cooperative Agricultural Development Project, (Morocco)

Background for the Morocco project

This five year project runs from September 1992 to September 1997. The approved LOP funding is \$4,939,000. This was the first MERC project between Israel and an Arab country other than Egypt and the first with a non-government cooperator, an agribusiness company called the Maghreb Agricultural Cooperative in Azemour, Morocco. The project calls for an Israeli technical expert to be assigned to the project site in Morocco.

The Moroccan Cooperative Agricultural Development Project, (Morocco), is funded under the Middle East Regional Cooperation Program. The overall goals of the project are to foster cooperation between Israeli and Moroccan scientists, to strengthen institutional linkages among the cooperating institutions, and to increase the ability of Morocco's agriculture sector to meet internal demands for agribusiness projects and to increase agribusiness exports from both Israel and Morocco.

The specific project objectives in Morocco are

1 To construct a Seedling nursery with an initial capacity of one million seedlings a year of tomatoes, peppers, cucumbers, and melons for farmer use

Capacity will increase to five million seedlings/year by the PACD

2 A pot-plant nursery will be constructed to produce rooted seedlings and finished pot plants of ornamentals for both the local and export markets

3 To develop commercial micro-propagation capacity in Morocco of disease free material, mainly banana and carnation, for local growers who now import their planting stock

4 To develop optimum cultural practices for the production of open field grown ornamentals collected from Morocco, Israel, Australia, and California

5 To experiment and demonstrate all parameters of open field and greenhouse production of vegetables for the fresh market and processing industries

6 Extension staff of Hassan II Institute and the National Institute for Agricultural Research will be trained at the Azemour project site and they, in turn, will help train groups of farmers at the site

The specific project objectives in Israel are:

1 To breed high quality, high yielding processing tomatoes for Morocco

2 To develop management procedures for onion production based on plant physiology and nutritional needs

3 To study the effects of environment and seed treatment on growth and germination of *Verticordias* for flowering branches and pot plants

4 To make extensive truffles collections in Morocco and to domesticate the truffles for commercial production

5 To conduct tissue culture (micro-propagation) studies on Eucalyptus and banana at Ben Gurion University and to train Moroccan technicians

6 An economic and marketing study will be conducted on the crops and products being studied under the project

Section Three Statement of Work

There are three major areas of concern in these evaluations 1) management, 2) cooperation, and 3) technical progress toward meeting the stated subproject objectives on schedule

The following components should be considered and addressed in the team's reports, as well as additional items based on the professional judgment of the team members The discussion of each component should be concise, identifying factors affecting implementation in the context of the project purpose and the logical framework Recommendations should be confined to significant factors that can be implemented and that will result in increased cooperation or in generating more useful technology for the target farmers Mid-term evaluations should address the need to consider which activities are potentially successful and should receive more resources in a reallocation of resources within the project, and which

activities appear to have less potential for success and should receive less resources. The economics of protected agriculture is dynamic and the profitability of many of the crops being researched may change during a five year period. The team should assess whether or not the economic and marketing studies have been done and are relevant, and whether current and projected market prices remain favorable for the target commodities. Also, comment on whether or not the marketing data are regularly updated in response to market changes.

Management

Assess the project management and the design format of the three for the following

- Assess the U S institution in its back-up role in relation to coordination of work, fund flow, report submission, research monitoring, equipment purchasing, convening meetings, and communicating with all parties, including AID
- Are technical reports filed in a complete and timely manner? Do the annual and semi-annual reports contain hard data to verify progress?
- Can the participants at technical meetings and workshops openly discuss each others' research in a typical peer review fashion?
- Do funds flow to PIs as planned, and are financial reports submitted on schedule?
- When the MERC program was initiated, the Steering Committee was an essential management component because senior officials were needed to encourage and protect cooperating scientists. Is this committee still necessary?

Cooperation:

Strengthening institutional linkages among the cooperating institutions and countries is a major objective of each of the projects. Quantify the amount and sustainability beyond the life of the project of the cooperation between Israeli and Egyptian/Moroccan scientists and technical and administrative personnel generated by this project by noting the following

- Number of scientists, others, and institutions of both countries involved in the project
- Number of scientists visiting counterparts' work sites
- Number of co-authored publications or presentations at international meetings
- Evidence of data, germplasm, analysis, students, and insights exchanged
- Distinguish between collaborative research between Israeli and Egyptian/Moroccan scientists on a single activity and that which is merely conducted in parallel

Specific progress toward subproject objectives:

The subprojects of each project should be evaluated to determine whether they have accomplished what was planned by the technical committees and set as goals in the annual work plans. A listing of research conducted and technology generated should be compiled. Other accomplishments, such as training, equipment purchases, and technology transfer are to be noted and compared with planned progress. The team members should comment on whether or not each of the subprojects will reach its intended objective by the PACD and what steps will be necessary to reach the objective.

(Refer to appendix I for a list of specific questions for each of the subprojects to assist the team in their deliberations with the project scientists.)

Section Four Methods and Procedures

The team will follow the format and guidelines established by USAID in the supplement to Chapter 12, AID Handbook 3, entitled AID Program Design and Evaluation Methodology Report No. 7.

The team will use the following document review, data collection, and interview methods,

- 1) Attend briefing in AID/Wash and in U.S. Embassies in Cairo, Tel Aviv and Rabat
- 2) Review all relevant project and grant papers, progress reports and previous evaluation reports
- 3) Interview members of the trinational steering and technical committees, subproject principal investigators, and examine activity records, data analysis, and conclusions
- 4) Brief the project coordinator of each country of your findings and then brief AID/Wash before writing the final evaluation report

The schedule for the evaluation is attached.

Section Five Evaluation Team Composition

The team will consist of three professionals with the following qualifications:

- 1) A Protected Agriculture/Horticulture expert that will be able to analyze and assess the biological science aspects of the six major activities. This expert should have a Ph.D. in a botanical science and have a current position in research in protected agriculture. It is not assumed that any individual will be an expert in all of the subprojects, but with the assistance of the other team member, should be able to ascertain progress attained and steps needed to correct progress delays. Demonstrated

technical writing abilities are essential and previous evaluation experience is desirable

2) An Agriculturist or Sociologist to examine evidence of cooperation and collaboration between and among project participants, including scientists, managers and others, and the development of cooperative or interdependent institutional linkages among the institutions involved in the projects, and among sister national institutions, if any. Evidence of linkage into international research networks should also be examined

3) An Agronomist/ Agricultural Research Management specialist/Team Leader. This expert should have an advanced degree in Agronomy and experience in the crops and environment central to these projects. He or she should be knowledgeable in research organization, system functions and research methodology in order to comment on research procedures in the projects and whether the management of these projects might profit from reorganization.

Each team member should have adequate experience in their respective fields. The only language requirement is English proficiency. Prior work in Egypt, Israel or Morocco will be considered a strong plus. A laptop computer will be provided to each team member and members are expected to be proficient in the use of word processing.

Section Six Reporting Requirements

An evaluation report will be written for each project.

The format of the evaluation reports will follow AID guidelines established in, The supplement of Chapter 12 of AID Handbook 3.

The reports will include an executive summary, project data sheet, table of contents, findings, recommendations, and appropriate appendixes (evaluation scope of work, list of people contacted, bibliography). The body of the reports, exclusive of executive summary and appendixes, should not exceed 30 single spaced pages. The evaluation team will formulate their findings and from these prepare a set of conclusions for each of the objectives of the subprojects as well as for management and cooperation. For the mid-term evaluations, a set of recommendations will be prepared that will help ensure that the objectives of the project can be successfully concluded by the project PACD. The final evaluation will concentrate on determining whether the project was successful in meeting its stated end of project objectives and what further activities might warrant consideration.

The report will be written jointly by all members of the team under the coordination of the team leader, who will be responsible for briefing appropriate USAID, U S Embassy and host government officials. The team leader is responsible for the timely submission of the final report.

A draft of the recommendations to be included in the evaluation report is due prior to the team's departure from the Middle East countries and is to be discussed with the U S Embassy/USAID in each of the three countries. The final report will be completed prior to the team leader's return home or at a reasonable later date negotiated with the contractor, but in no case later than 30 days after completion of the evaluation.

Section Seven Funding

Financial support for the evaluation will be supplied by A I D.

Appendix I Additional questions to be addressed

Management questions for the three projects

- How valuable has the internal evaluation been as a management tool?

Were any worthwhile recommendations made and did the project steering committee act on any of them?

- The project has U S consultants serving on the project technical committee, some serve on more than one SDSUF-MERC project. Does their input into the project result in positive, documented change? If so, please state.

- Review the steering committee reports and analyze the benefit of the two committee (technical and steering) system. Could the technical committee be restructured in such a way to serve both purposes?

Related to specific activities in the CALAR II project

a) Agromanagement

- What has been the growth response of tomato to saline irrigation?
- What is the role of Calcium and Cobalt in salt tolerance of melons?
- Is there any progress in reducing chilling injury to cucumbers?

b) Environmental modification

- Are there any specific recommendations on use of growth mediums, air temperatures, and relative humidities for the crops being studied?

c) Structure selection

- What are the results on the optimal use of shading materials, fans, and size of plastic houses, on crop production in the summer months? Do results so far justify continuing this work?

d) Genetic modification

- Quantify specific documented success in developing plant cultivars that are superior in salt, heat, or pest tolerance
- Have any improved varieties been developed and commercially grown that were a result of this project?

e) Post-harvest aspects

- Report on any progress in the studies on cooling, shelf life, packing and controlled storage of any of the crops researched

f) Floriculture

- Have any new crops been offered to farmers for adoption and what was the market response?

Related to specific activities in the Morocco project

- The project has completed its third draft of an economic and marketing study Is the study being used to guide the project as claimed?
- Israel is breeding high yielding tomatoes for Morocco Name the promising cultivars and their potential yield
- Is the chart showing all activities and progress for Morocco prepared by UC Davis a useful tool for project management and evaluation?
- Why did it take half the project life to decide whether to build the micro-propagation unit at the project site? Did the technical and steering committee function properly to resolve this dispute?
- The technical committee has recommended that the onion research should be terminated by October 1994 and that another activity should be chosen to replace it How can this management decision be resolved without waiting for the annual committee meetings?

APPENDIX B: Contacts Made During Evaluation of the Morocco Agricultural Development Project

USAID Washington, D C

John Daly, Ken Prussner, Herb Blank, Pamela Mandel, Sheree Belamy, Charles Uphouse

Winrock International, Washington, D C

Floyd Williams, Edward Rice, Vicki Walker, Doug Clark, John Pino

U S Project Members at San Diego State University Foundation

Mohammed El-Assal, Bonnie Stewart, Harry Albers, Frea Sladek, Tim Hushen, Davene Gibson, David Moore

Other U S Project Members from U Cal Davis

Dr Michael Reid, Dr Adel Kader, and Richard Jones (by phone)

American Embassy, Israel

David Mulenex, Science Advisor

Israel Project Members/Contacts

Dr Samuel Pohoryles, Dr Dov Pasternak, Dr Irena Rylski, Mr Ben Ami Bravdo, Prof Y Fulman, Joel Schechter, Dr Yitzhak Abt, Dr Yoseph O Elkana, Uri Drori, & Israeli scientists (see evaluation schedule)

Other Contacts in Israel

Prov A Shimshony, Director, MOA, Veterinary Services and Animal Health

Lechaim Naggan, Vice-President and Dean for Research & Development, Ben Gurion University of the Negev

David Wolf, Acting Director, Ben Gurion University of the Negev, The Institutes for Applied Research

Morocco Contacts

USAID Agribusiness Marketing Investment Program, Casablanca

Donald S Humpal, Rodrigo Brenes, and Abdellatif Aboulkassimi

AMARIS Nurseries at Azemour

Mr Driss Lahlou, Mr Karim Lahlou, Mr Omar Mounaz, Mr Hammoutou El-Mekki (MOA), Mr Allal Chibane (MOA), Mr Itzzak Ayalon, Mr Gadi Regev, Ms Fatima Agdid and other technicians of the project

Hassan II Institute Scientists

Dr Kenny Lahcen, Tissue Culture Specialist
Dr Mohamed Achouri, Pathologist/Truffles Collaborator
Dr Brahim Hafidi, Director

USAID Rabat

Mr James Hradsky & Mr Alan Hurdas, and Dr M'hamed Harafi

American Embassy, Rabat

U S Ambassador to Morocco, Marc Ginsberg

Cabinet Royal-Palais

Chargé de Mission (Science and Technical Advisor to the King) Dr Mostafa Terrab

SASMA (Society of Service to Agriculture, Morocco)

Mr Ahmed Lekchiri, Director General

MANAY MAROC

Hassan Alami, Expert Comptable

Business Translation Services

Youssef Benabdeljalil

APPENDIX C: References Consulted During Evaluation of CALAR II, Maryut II, and Morocco Projects

- 1 Integrated Agricultural Development Project Maryut Agroindustrial Complex in the Western Desert of Egypt Continuation and Expansion Submitted May 1990 & revised July 1990 Request submitted to the Bureau for Asia and Near East USAID
- 2 Final Evaluation Report The Cooperative Marine Technology Program for the Middle East Final Evaluation Report July 1993
- 3 Cooperative Arid Lands Agricultural Research Project Mid-term Evaluation Feb & March 1993
- 4 A I D Evaluation Handbook Supplement to Chapter 12 A I D Handbook 3 Project Assistance April 1989
- 5 Maryut Project Internal Evaluation Sept 1993 Dr R A. Jones
- 6 Final External Evaluation Trnnational NUBASEED Development Project Report Oct 1992
- 7 Draft MERC Program Guidelines for individuals interested in preparing unsolicited grant proposals to the MERC program December 1994
- 8 SDSUF Contractual Sub-grant with the Egyptian Ministry of Agriculture for the MARYUT II project
- 9 MARYUT II Integrated Agricultural Development Program request for a revision to the Office of Procurement USAID Dec 15 1992
- 10 Documentation of GRANT Amendment of Contract by USAID
- 11 Amendment Number 1 Sub-grant between SDSUF and the Egyptian Ministry of Agriculture of the Arab Republic of Egypt
- 12 Amendment Number 2 Sub-grant between SDSUF and the Egyptian Ministry of Agriculture of the Arab Republic of Egypt
- 13 Amendment Number 3 between SDSUF and the Egyptian Ministry of Agriculture
- 14 Setting an Agenda for Cooperative Development in the Middle East Publication of the Center for Social Policy in the Middle East May 1986
- 15 Review of Middle East Regional Cooperation Program (Project No 398-0158 25) Feb 1991
- 16 Annual Technical Progress Report (Oct 1993 to Sept 1994) of Moroccan Cooperative Agricultural Development Project submitted to USAID (Bureau for the Near East) by the SDSUF
- 17 Cooperative Arid Lands Agriculture Research Program II (CALAR II) A Program in Protected Agriculture Sponsored by the Joint Agricultural Committee Egypt-Israel Submitted by SDSUF to USAID Bureau for Near East (Abridged version)
- 18 Small Farm Handbook Small Farm Center Univ of Calif Division of Agriculture and Natural Resources Oct 1994
- 19 Small-Scale Postharvest Handling Practices A manual for Horticultural Crops L Kitinoja & Adel A Kader Dept of Pomology Univ of Calif at Davis Jan 1994
- 20 Maryut II Workplans for 1994/95 Revised at the Maryut II Technical Meeting held in Cairo June 1994
- 21 Maryut Newsletter Spring-Summer 1994
- 22 Progress Report on the Achievements of Different Activities in Maryut Project April 1994
- 23 Report Schedule of Maryut II for Israel
- 24 CALAR II Fourth Annual Scientific Workshop Schedule and list of participants San Diego California May 2-6 1994
- 25 The Second CALAR II Workshop Book of Abstracts Beer-Sheva Israel March 13-20 1992
- 26 CALAR II Thrd Scientific Workshop Book of Abstracts Alexandria Egypt March 8-11 1993
- 27 Abstracts of the CALAR II Fourth Annual Scientific Workshop San Diego California May 2-6 1994

- 28 Cooperative And Lands Agriculture Research Program II Newsletter for Winter/Spring 1994
- 29 Cooperative And Lands Agriculture Research Program II Newsletter for Fall 1994
- 30 Cooperative And Lands Agriculture Research Program II Newsletter for Summer 1992
- 31 Cooperative And Lands Agriculture Research Program II Newsletter for Winter 1991
- 32 CALAR II Annual Technical Report Sept 30 1993-March 31 1994 Submitted by SDSUF
- 33 Communiqué from USAID promulgating Grant # HNE-0158-G-00-2075-00 to SDSUF (including estimated budget) Aug 28 1992
- 34 Required Revised Economic Analysis for Maryut II Integrated Agroindustrial Complex in the Western Desert of Egypt SDSUF December 1993
- 35 MOROCCO REPORT Newsletter of the Moroccan Cooperative Agricultural Development Project SDSUF Spring 1993
- 36 Morocco Report Newsletter Fall 1993
- 37 Morocco Report Newsletter Fall 1993
- 38 AMARIS Morocco Project Newsletter Fall 1994
- 39 Integrated Agricultural Development Project Maryut Agroindustrial Complex in the Western Desert of Egypt External Evaluation April 14-18 1990
- 40 Grant authorization to SDSUF for the CALAR II Program June 1990
- 41 Agricultural Development in the Middle East in A Regional Context Middle-East Peace Negotiations Multilateral Working Group on Reg Econ Development Final Report August 1994
- 42 San Diego State University Foundation Annual Report (Five Decades) 1992-93
- 43 Research abstracts of Scientists at Volcani Institute Institutes for Applied Research of Ben Gurion University & the Rehmat Negaav Station
- 44 Micro Propagation of Ornamental Eucalyptus Training Work of Fatima Agid Annual report Aug 1993 - July 1994 David Mills Shvta Wenakart & Fatima Agdid Submitted to AID/MERC by the Institute of Agriculture & Applied Biology
- 45 Irrigation with Brackish Water under Desert Conditions VIII Further Studies on Onion (*Allium cepa* L.) Production with Brackish Water Y De Malach S Mendlinger I Borovic & N Abd El Salam Jan 1989
- 46 Human Resources of Agricultural Research in Egypt Arab Republic of Egypt Ministry of Agriculture and Land Reclamation Agriculture Research Center Information and Documentation Center Dec 1994

APPENDIX D: Morocco Agricultural Development Project Evaluation Schedule

U S. AND ISRAEL SCHEDULE

Mon	Dec	12	Dr Fink Travels to Washington D C for meeting with Winrock, Int , evaluation team and USAID
Tue	Dec	13	Team meeting in Washington, D C
Wed	Dec	14	Team meeting in Washington, D C
Sun	Dec	18	Dr Rodney Fink, Leader of the evaluation team, travels to San Diego
Mon	Dec	19	Dr Fink visits SDSU Foundation In the evening, Dr Fink, Dr Mohamed El-Assal and Dr Bonnie Stewart Travel to UC Davis
Tue	Dec	20	Drs Fink, El-Assal and Stewart meet with Drs Adel Kader and Mike Reid at UC Davis Drs El-Assal and Stewart return to San Diego in the evening
Wed	Jan	4	Evaluation team members Drs Rodney Fink, Mary Peet, Jody Garbe and David O'Brien depart the U S for Tel Aviv, arriving Jan 5, 1995
Thu	Jan	5	Team arrives in Tel Aviv at 7 00 p m & proceeds by taxi to the Moriah Plaza Hotel
Thu	Jan	5	7 00 p m Business dinner at the Moriah Plazawith the Israeli CALAR/Maryut/Morocco Steering Committee Members Drs Samuel Pohoryles, Itzhak Abt, Irit Rylski, Lechaim Naggan, Joel Schechter, Itzhak Peretz and Dov Pasternak (Mr David Mullenex, Science Attaché, US Embassy will not be available in Israel until January 8, 1995)
Fri	Jan	6	9 00 a m Meet with scientists and Technical Committee Member of Morocco projec
Sat	Jan	7	Free day, P M meeting with Steering Committee Members
Sun	Jan	8	9 00 a m visit Volcani Institute and project sites CALAR and Morocco sites until 4 00 p m Travel to Beer-Sheva in the evening, Overnight at the Desert Inn Hotel, P O Box 246, Beer-Sheva, 84 102
Mon	Jan	9	9 00 a m to 4 00 p m Visits Ben Gurion University/Institute for Applied Research Meet members of the CALAR/Morocco Projects Business lunch with Professor Lachaim Naggan, Vice President, BGU, and Mr Moshe Amir, Accounting Dept , BGU
Tue	Jan	10	9 00 a m to 5 00 p m Visits the Remat Negev Experimental Station Meet scientists of the Maryut Project Presentations by Maryut Scientists and site visitations Return to Tel Aviv in p m Overnight at Moriah Plaza Hotel
Wed	Jan	11	Team meets with David Mullenix, Science Attache at the U S Embassy Write reports

Thu Jan 12 Write reports Fink & O'Brien travel with Mr David Mulenex, Science Attaché at the U S Embassy to the Veterinary Institute near Volcani to meet with Arnon Shimshony and others of the Institute about a MERC program and their plans for an extension Dr Peet visits with individual scientists at Volcani Institute and Hebrew University Late in the day, travel to Cairo via El Al flight 443 departing 8 00 p m arriving in Cairo at 9 20 p m proceed by taxi to the Cairo Nile Hilton Begin evaluation of CALAR II and Maryut II MERC Projects

Wed Jan 25 Team travels to Morocco via Gulf Air 81, Departing Cairo 2 00 p m Arriving Casablanca 5 40 p m

Timetable for visitation at the Volcani Center, Jan , 1995

9 00 - 09 30 Meet Prof Y Fulman - Chief Scientist, Ministry of Agriculture

9 30 - 10 00 Effect of root restriction, nutrition and hormonal balance on quality of tomato fruit - Drs Asher Bartal and Eitan Pressman

10 00 - 10 30 Genetical, biochemical and environmental factors determining fruit quality in melons - Drs Arthur Schaeffer

10 30 - 11 00 Effect of environment on fruit quality of pepper - Dr Beni Aloni

11 00 - 11 30 1) Breeding of high quality open field tomatoes 2) Control of plant size in speeding nurseries Drs Moshe Bar and Eitan Pressman

11 30 - 12 00 Breeding of greenhouse tomatoes for tolerance to the Yellow Curled Leaf virus - Dr Meir Pilowsky

12 00 - 12 30 Collaboration with the extension service Mr Omar Zeidan, Mr Beni Gamliel

12 30 - 13 30 Lunch

14 00 Depart to Beer-Sheva

15 00 - 16 30 Visit "Sde Teiman" plot - introduction of open field ornamentals

Evaluation Committee - MERC Programs

Timetable for Meetings at the Institutes for Applied Research

Ben - Gurion University

January 9, 1995

08 30 - 09 00 Meet Director - Prof David Wolf
 09 00 - 11 30 Visit research sites at IAR
 11 30 - 12 00 Research on new vegetables for export and on melon
 breeding for winter season - Drs Aliza Benzioni,
 Sam Mendlinger
 12 00 - 12 30 Research on Flowers - Dr Ruth Shillo
 12 30 - 13 30 Lunch with Prof David Wolf and Mr Moshe Amir
 (Director - Research Contracts)
 13 30 - 14 00 Solar greenhouse - Drs Dov Pasternak, Eli Korin,
 Uri Drori
 14 00 - 14 30 Pitahaya - a new fruit for greenhouses, Research
 on Argan Dr Avinoan Nerd
 14 30 - 15 00 Research on the Moroccan Truffle - Drs Varda Zur
 and Nurit Bejerano
 15 00 - 15 30 Tissue culture propagation of Eucalyptus - Dr
 David Mills
 15 00 - 16 00 Verticordia - a new species for decorative
 branches - Mr Y Ben Dov

Visitation to Ramat Negev Jan 10, 1995

8 15 Leave hotel
 9 00 - 9 30 Description of Ramat Negev R&D , Y Moscovic
 9 30 - 10 00 Description of Ramat Negev Station, Y De Malach
 10 00 - 11 30 Meet Maryut Technical Committee and Scientists
 11 30 - 12 45 Visit Farm
 13 00 - 14 15 Lunch & tour at Kibbutz Revivim
 15 00 - 16 30 Visit Moshav Kadesh Bunnea Application of CALAR
 16 30 Return to Tel Aviv

MOROCCO SCHEDULE

Thur Jan 26 Breakfast meeting with Don Humpal, Director of
 USAID Agribusiness Marketing Investissement
 Program with Rodrigo Brenes and Abdel Kassim
 Project visit to Azemour to view Amaris Nurseries,
 interview project personnel and farmer who has
 bought materials from the nursery Others
 accompanying on the trip (and interviewed) were
 Mr Driss Lahlou, Dr Bonnie Stewart, Mr
 Hammoutou El Mekki, Mr Allal Chibane, Mr Omar
 Mounaz, Mr Itzak Ayalon, & Mr Gad Regev Visited
 with AMARIS employees, including Fatima Agdid, who
 had trained in Israel
 In evening, had meeting with Hassan II Institute
 scientists (Agadir), Dr Kenny Lahcen, Dr Mohamad
 Achouri, and Dr Brahim Hafidi (director)
 Fri Jan 27 Travel to USAID Rabat for appointments with Mr
 James Hradsky, Mr Alan Hurdus (USAID), U S
 Ambassador Marc Ginsberg, and Dr Mustapha Terrab,

Chargé de mission Cabinet Royal-Palais (also present Mr Lahlou & Dr Stewart)
 Return to Casablanca and meet with Maghreb Agricultural Fiduciary Mr Hassan Alami (Also present, Mr Lahlou, Itzak Ayalon, Bonnie Stewart)

Sat & Sun,
 Jan 28 & 29 Meetings with Bonnie Stewart, Karim Lahlou, Itzak Ayalon, & Gad Regev Team meeting to discuss evaluation and follow-up meetings

Mon Jan 30 Fink to Rabat with B Stewart for meeting with Alan Hurdus (USAID) and Dr Mustapha Terrab, chargé de mission Cabinet Royal Drs Peet & O'Brien meet with Mr Ahmed Lekchiri, Director General of S A S M A (transportation and arrangements provided by Abdel Kassimi of USAID A M I project) O'Brien and Garbe meet with USAID and MOA representatives concerning Mission activities, hydrology, project activity and related matters P M meeting of team with Mr Driss Lahlou and Karim Lahlou using French speaking translator

Tue Jan 31 Phone conference between team leader and Dr Dov Pasternak of Ben Gurion, University Team Leader meets with Manay Maroc (Hassan Alami), team meeting and work on report

Wed Feb 1 Work on report, Phone conversation with Team Leader and USAID Mission Officer Mr Alan Hurdus about the project evaluation

Thur Feb 2 In country personal time, and report preparation

Sat Feb 4 Travel to U S

Feb 6 Briefing to Winrock and USAID, Washington, D C

Feb 7 - Mar 1 Prepare draft reports

March 31 Complete final report

APPENDIX E. Message Exchange
Between Driss Lahlou and SDSUF

San Diego State University
FOUNDATION

San Diego, CA 92182-1900

SDSUF

December 29 1994

Mr. Driss Lahlou
President, Maghreb Agriculture
Casablanca Morocco

Post It brand fax transmittal memo 7671		# of pages > 9
To	BONNIE STEWART	
Co	Co	
Dept	Phone #	
Fax #	972 3 527 1065 (619) 582-9164	

Dear Driss

I enjoyed the time spent with you, Dov Pasternak, and Bonnie Stewart in Casablanca recently. I thought the meetings were very productive and appreciate your contributions, including the visit to the micropropagation lab. You and the other coordinators made excellent progress in arranging for more frequent communications, selecting a new Moroccan project manager, moving ahead with the micropropagation lab plans, and planning for the USAID evaluation next month. The project is in an excellent position to move forward into a new, important phase, incorporating your suggestions at the October Steering Committee meeting.

I also want to thank you for bringing your concern that Morocco may not be receiving 50% of the budget to my attention. Upon returning to San Diego, I investigated the situation thoroughly. *I can assure you that Morocco is receiving 50% of the budget, according to the original agreements between all parties.* The Morocco Cooperative budget funds in San Diego are only being spent for purposes you specifically approved in principle during the meetings in Casablanca before the project was submitted. A review of this matter, including additional budget information, is attached. I hope it will be helpful in clarifying the situation.

I have reviewed your concerns with Harry Albers, Sam Pohoryles, and Dov Pasternak and have explored the possibility of rebudgeting any remaining U.S. or Israeli funds to provide additional funds for Morocco. *The U.S. and Israeli partners will not renegotiate the original budget agreements.* We acted in good faith and made sacrifices initially so that Morocco would receive 50% of the budget. We are already paying for the major share of the cooperative travel activities. We strongly believe available and future funds must be allocated and spent as planned in order to preserve cooperative activities, conduct a successful technical program, and carry out the terms of the USAID grant.

To date \$1,322,486 has been officially awarded for Morocco. An additional \$1,147,514 is budgeted for future Morocco activities--including the micropropagation lab--through the end of the project.

The leader of the USAID evaluation team, Dr. Rodney Fink, has started reviewing the U.S. portion of the Moroccan and two Egyptian regional cooperation projects. He met with SDSU Foundation officials on December 19th, and we advised him that the Foundation has been informed of a serious problem connected with the Morocco project. We additionally advised him that we are attempting to resolve this problem satisfactorily for all partners.

Driss, I sincerely hope you will review and consider all of the attached additional information very carefully. Your U.S. and Israeli partners would like to continue the project, and we assure you that all business is being conducted as originally agreed. All of us would like to receive more monies, but there are no additional funds available. I will call you next week after the holidays to learn what you wish to do.

Meanwhile, Harry Albers and I send our very best wishes to you and your family for a prosperous and happy 1995.

Cordially,



Freya Sladek, Associate General Manager
Sponsored Research and Educational Programs

attachment

cc w/attachment	Harry Albers
	Sam Pohoryles
	Dov Pasternak
	Bonnie Stewart

MOROCCAN COOPERATIVE AGRICULTURE DEVELOPMENT PROJECT

Budget Review for Mr. Driss Lahlou, President, Maghreb Agriculture

- 1 At your urgent request, all parties (Moroccan, Israeli, U S) agreed in principle *before starting the project* that one half of the total budget would be provided for Morocco
- 2 In order to reach the 50% level for Morocco the Israeli and U S partners gave up substantial funds from their initial budgets
- 3 All parties also agreed in principle *before starting the project* that a portion of the Morocco budget funds would be retained in San Diego for use of cooperative activities primarily benefitting the Moroccan project site
- 4 During the negotiations *before starting the project* you reviewed all items proposed by the Israeli and U S partners for inclusion in the Moroccan cooperative (San Diego) budget and agreed that certain categories of costs and dollar amounts were acceptable for the Moroccan cooperative budget
- 5 *Only the categories and dollar amounts you agreed were acceptable were included in the Moroccan cooperative portion of the budget submitted to USAID*, and a copy of this budget was provided to you
- 6 The categories you agreed to were
 - Technical Advisor* Israeli working in Morocco guiding the project on site
 - Design Engineer* Israeli(s) working in Morocco to advise on facilities construction, etc
 - Consultants* Moroccan and U S advisors working in Morocco
 - Steering Committee* Costs for Moroccan members (U S and Israelis pay own costs)
 - Technical Committee* Costs for Moroccan and U S members (Israel pays own costs and U S has contributed some U S member costs from Hansen Institute)
 - Technical Visits to Israel* Moroccan travel
 - Marketing Study* Study to guide the investment strategy and to demonstrate the viability of the project conducted by Professor Pohoryles in Israel, required to receive USAID funds
- 7 A summary of the costs budgeted in the Moroccan cooperative budget is attached for your information (Exhibit 1) In addition, a copy of the USAID approved budget is attached (Exhibit 2) Please note that 50% of the budget has been reserved for activities primarily benefitting Morocco, as follows

Moroccan Cooperative Budget		\$ 299,650
Moroccan Subgrant Budget		2,170,350
<i>Total Moroccan Budget</i>	<i>(50%)</i>	<i>\$2,470,000</i>
 Total USAID Budget	 (100%)	 \$4,939,486

8 The agreement to provide 50% of the budget for Morocco was a major cooperative gesture by the Israeli and U S partners In regional projects funded by USAID the budget is usually shared equally by the mideast cooperating countries after U S administrative costs are provided This is true even when the demonstration site is located outside of Israel, such as in the Maryut II project

9 The proposed budget and activities submitted to USAID were based upon the initial agreements as stated above USAID decided to fund the project based on our proposal, and we are required to conduct the activities and spend the funds essentially as proposed unless we get specific approval in advance from USAID to make changes

10 The Morocco cooperative (San Diego) budget is only funding a portion of the cooperative activities The Israeli and U S budgets are also paying for cooperative activities including the Steering Committee, Technical Committee, and Coordinator travel The Israeli government and the U S Hansen Institute have contributed amounts in addition to those provided by USAID for some cooperative activities

11 It is possible some of your concerns about the Moroccan cooperative budget have been caused because you have not been informed in detail about how these funds are being spent These funds have been spent according to the categories you agreed to in principle initially Upon Bonnie Stewart's return to San Diego after her travel related to the USAID evaluation, the Foundation will provide you with a detailed accounting of all cooperative expenditures until now and will provide future reports regularly

12 You have requested that the Moroccan cooperative budget funds be moved into the Morocco subgrant budget so that you can shift funds according to the needs of the project A substantial portion of the funds have already been spent according to the initial agreements Of the remaining and future funds, Bonnie will work with you to identify potential savings to transfer to the subgrant out of the following categories Consultants, Steering Committee, Technical Committee and Technical Visits to Israel We will need USAID approval to do this, and we must be certain to preserve adequate funds for cooperation Driss, I am sorry but funds can not be transferred from the Technical Advisor, Design Engineer, or Marketing Study categories, because AID requires the Marketing Study and the other funds are needed for Israeli technical assistance in Morocco

13 You also requested that you be provided with information about planned expenditures from the San Diego portion of your budget in advance and have the ability to approve them in general Past expenditures were made based on your approval before the project began that certain

categories of expenses were acceptable. We have assumed that when Israeli or U S consultants worked in Morocco that you have been fully informed and approved of their services, via your discussions with the technical committee and technical advisor, arranging for visitors' entry, etc. If this has not been the case, the project coordinators should discuss setting up a system to ensure that you are fully informed and support proposed cooperative efforts.

14 You expressed a concern that Moroccan cooperative funds were used for U S technical committee members and wanted to discuss the possibility of sharing this expense with other partners. Some expenses have already been shared by the Hansen Institute. We can not change past expenditures, but you may wish to discuss this topic with the other coordinators. Although the Israeli and U S budgets don't have funding for this purpose, perhaps you could cooperatively plan to reduce future costs in some way.

15 To date \$1,322,486 has been officially awarded to Morocco (\$1,180,736 for the subgrant and \$141,750 for cooperation). *An additional \$1,147,514 is budgeted and pending (\$989,614 for the Morocco subgrant and \$157,900 for cooperation)* through the expected end date of the project. Funds currently awarded and budgeted for the Morocco portion of the project are summarized in Exhibit 3.

16 In awarding future funds, USAID will be considering the results of the January evaluation.

17 The Israeli and U S partners have cooperated fully and swiftly with you to select a Moroccan project manager to recruit a new Israeli technical advisor, to reinstate the plans for a micropropagation lab, and to increase communication among the project country coordinators. As a result, the project is ready to move into a new, very important phase.

MOROCCO COOPERATIVE BUDGET

*Funds Spent in San Diego for Activities Primarily Benefiting Morocco
As Agreed in Principle by all Partners Prior to Beginning the Project*

<u>Five-Year Budget Amount</u>	<u>Moroccan Cooperative Budget Category</u>	<u>Description</u>
\$91,666	<i>Technical Advisor</i>	Israeli Technical Advisor, work done on-site in Morocco (Ex Itzhak Ayalon)
58 334	<i>Design Engineer</i>	Israeli Technical Assistants, work done designing speeding production facilities, automated speeding nursery, pot plant and hardening nursery, other direct assistance for or on the Morocco site (Ex Uri Drory)
28 150	<i>Consultants</i>	Moroccan and U S consultants, work done in Morocco (Ex Rick Jones)
22,000	<i>Steering Committee</i>	Costs for Moroccan members only (Israelis and U S pay own costs)
33 000	<i>Technical Committee</i>	Costs for Moroccan and U S members (Israelis pay own costs, U S has paid for some U S members)
6 500	<i>Technical Visits to Israel</i>	Travel for Moroccans including Project Coordinator travel to Israel and travel for Moroccan participants to receive training and/or visit sites in Israel
60 000	<i>Marketing Study</i>	Study of market conditions for Morocco, strategy for project investment, economic viability of speeding nursery, internal rate return, etc , conducted by Professor Pohoryles in Israel, required to receive USAID funds
<hr/> \$299,650 <hr/>	<i>Total Moroccan Cooperative Budget</i>	

MOROCCAN
COOPERATIVE AGRICULTURAL
DEVELOPMENT PROJECT
BUDGET SUMMARY
1 February 1992 July 30, 1997

CATEGORY CUMULATIVE	ESTIMATED PERSON MONTHS	TOTAL	U S MANAGEMENT BUDGET	MOROCCO SUBGRANT BUDGET	MOROCCO SAN DIEGO BUDGET	ISRAEL SUBGRANT BUDGET	ISRAEL SAN DIEGO BUDGET
nes including benefits							
S Admin Coordinator	38	\$220 863	\$220 863				
Admin Assistant	37	\$76 150	\$76 150				
Asst Project Coordinator	60	\$232 077		\$232 077			
Farm Manager	60	\$193 260		\$193 260			
Visiting Technical Advisors	120	\$39 285		\$39 285			
Resident Technical Staff	200	\$295 520		\$295 520			
Non Professional Work On Site		\$45,421		\$45 421			
Secretary	60	\$44 207		\$44 207			
Accountant	60	\$55 231		\$55 231			
Technical Advisor	60	\$275,000			\$91 666	\$183 332	
Design Engineer	60	\$175 000			\$58 334	\$116 668	
Research Scientist	48	\$151 500				\$151 500	
Visiting Technical Experts	10	\$15 000			\$0	\$15 000	
Asst Project Coordinator	12	\$50 000				\$50 000	
Local Technicians	5	\$20,500				\$20 500	
Casual Labor		\$5,400				\$5 400	
Total Person Months	830						
		\$1,894 412	\$297 013	\$905 000	\$150,000	\$542,400	
2 Fringe Benefits		\$88 114	\$88,114				
		\$88 114	\$88,114	\$0			
3 Consultants							
Technical		\$64,500	\$10 000	\$0	\$28,150	\$25,000	\$1,350
External Evaluations		\$0			\$0		\$0
		\$64 500	\$10,000	\$0	\$28 150	\$25,000	\$1,350
4 Travel							
Internal Evaluation		\$15,400	\$15 400				
U S./Morocco 6 Airfare \$1900							
Per Diem 10 days @ \$100/day = \$1 000						\$0	
Steering Committee (6 Meetings/9 people each)		\$78,600	\$34,600	\$0	\$22,000	\$0	\$22,000
U S./Morocco Airfare \$1,900 X 3 = \$5,700							
Israel/Morocco Airfare \$1000 X 3 = \$3,000							
Per Diem 7 days @ 100/day X 9 = \$6 300							
Program Coordination		\$77,740	\$22 820	\$0	\$0	\$53 000	\$1,920
U S./Morocco, Israel/Morocco, Morocco/Israel							
Airfare \$1,900 Per Diem 21 days @ \$100/day							
Technical Committee (6 Meetings/8 members)		\$102 496	\$6 564	\$0	\$33 000	\$0	\$62 932
U S./Morocco Airfare 4 @ \$1900 = \$7 600							
Israel/Morocco Airfare 4 @ \$1000 = \$4 000							
Per Diem 7 days @ \$100/day = \$8 400							

OFFICIAL BUDGET
APPROVED BY USAID

Exhibit 2

UDGET CATEGORY CUMULATIVE (Com d)	TOTAL	U S MANAGEMENT BUDGET	MOROCCO SUBGRANT BUDGET	MOROCCO SAN DIEGO BUDGET	ISRAEL SUBGRANT BUDGET	ISRAEL SAN DIEGO BUDGET
4 Travel (continued)						
Technical Visits to Israel (8 trips)	\$36,500	\$0	\$30,000	\$6,500	\$0	\$0
Morocco/Israel Airfare 8 @ \$1000 = \$8,000						
Per Diem 7 days @\$100/day = \$5,600						
Ground Transportation = \$1,500						
Technical Visits to Morocco (25 trips)	\$99,000					\$99,000
Israel/Morocco 8 @ \$1000 = \$8,000						
Per Diem 7 days @\$100/day = \$5,600						
Ground Transportation \$400						
Total Travel	\$409,736	\$79,384	\$30,000	\$61,500	\$53,000	\$185,852
5 Materials & Supplies						
Office Supplies & Equipment	\$8,500	\$500	\$8,000	\$0		
R&D Center						
(machinery irrigation & materials)	\$309,000		\$309,000	\$0		
Nurseries	\$269,000		\$269,000	\$0		
Laboratories	\$299,000		\$299,000	\$0		
Greenhouse Covers & Supplies	\$117,700				\$117,700	
Total Materials	\$1,004,200	\$500	\$886,000	\$0	\$117,700	\$0
6 Invitational Travel/Training	\$59,350		\$59,350	\$0		
Total Invitational Travel	\$59,350		\$59,350	\$0		
7 Operational Costs						
Electricity, Potable Water, Fuel, & Fences	\$270,000		\$270,000			
Telephone FAX, Postage & Other	\$62,000	\$22,000	\$20,000		\$20,000	\$0
Total Operational Costs	\$332,000	\$22,000	\$290,000	\$0	\$20,000	\$0
8 Marketing Studies	\$70,000	\$10,000		\$60,000		
Total Marketing Studies	\$70,000	\$10,000		\$60,000		\$0
9 Subcontractors	\$240,000				\$240,000	
Total Subcontractors	\$240,000	\$0	\$0	\$0	\$240,000	\$0
10 Total Direct Costs	\$4,162,312	\$507,010	\$2,170,350	\$299,650	\$998,100	\$187,202
11 Cooperating Country Indirect	\$128,715				\$128,715	
12 Subtotal	\$4,291,027	\$507,010	\$2,170,350	\$299,650	\$1,126,815	\$187,202
13 U.S. Indirect Costs	\$648,459	\$648,459				
14 TOTAL COSTS	\$4,939,486	\$1,155,469	\$2,170,350	\$299,650	\$1,126,815	\$187,202

MOROCCO BUDGET SUMMARY

Awarded and Pending Funds

	<u>Morocco Cooperative</u>	<u>Morocco Subgrant</u>	<u>MOROCCO Total</u>
<i>Agreements Signed</i>			
Year 1 (12 months)	\$ 68,000	\$ 432,000	\$ 500,000
Year 2 (15 months)	<u>73,750</u>	<u>748,736</u>	<u>822,486</u>
<i>Total Committed</i>	<i>\$141,750</i>	<i>\$1,180,736</i>	<i>\$1,322,486</i>
 <i>Unsigned Agreement</i>			
Year 3 (9 months)	\$ 46,280	\$181,159	\$ 227,439
<i>Future Awards Expected*</i>			
Year 4 (12 months)	55,810	404,228	460,038
Year 5 (12 months)	<u>55,810</u>	<u>404,227</u>	<u>460,037</u>
<i>Total Pending</i>	<i>\$157,900</i>	<i>\$989,614</i>	<i>\$1,147,514</i>

* Amounts budgeted USAID has not awarded these funds yet and will consider the results of the project midterm evaluation in making awards for Years 4 and 5

ost It™ brand fax transmittal memo 7671		# of pages ▶ 2
• Bonnie STEWART	From	CHRISTINE SALZER
• (a guest)	Co	
• Desert Inn Hotel	Phone #	
• # 972 7 412 772	Fax #	(619) 582-9164

Dear Frea

Since I received your fax from 49 December I can thank you for all the given explanations but when your saying the project is in good health I can't afford for not being sceptical During the last steering committee meeting in Casablanca I gave to all of you an analysis of the terrible conditions in where the project was And after my requirements we agreed to each other in trying to correct the direction of the project

After all I expected much more from this Israeli-Moroccan operation and now I feel disappointed but my hopes and faith in Israeli-Arabic peace are getting bigger and bigger

I still feel confident for this ideal I only was hoping a lot from that operation by like bring new things or technicity to the Moroccan agricultural industry But, unluckily, everything seems very different today No v the Moroccan partner feels like the Israelis driving all the operations in the way they liked by with no result at all Nothing new (or almost) has been wrote to Morocco neither for the cooperation

Concerning our agreement taken during the establishment of projects it is clear that we cannot renegotiate them And it was decided by all parts that a very small part of the Morocco budgets would be taken for the spending of the Moroccan cooperative but only for some spendings that would be done for the project site and with the agreements of the Moroccan parts So, you can understand my feelings and surprise when I discovered this huge cost of spending and with no agreement from my part!

For example it was never said that the Moroccan part should have to pay for the technical advisor or for the design engineer

After the pressure made by the Israelis to have an Israeli technical advisor on the site, it was clearly mentioned that he would be paid by the Israeli part itself

Dear Frea, I sincerely think that the three partners should meet each other as soon as possible to clarify things once and for all Now that we know each other better I am sure that we will catch up on the previous mistakes done and come to a new phasis for the success of this project

In any case, the Moroccan partner will never accept to lose thirteen ^{percent} ~~persons~~ of its initial budget

Although I am still convinced that we will find the proper solutions to all these problems in the very next meeting that I propose would be before January 20 1995 and then we would go further on a new basis much healthier and easier than before

To first fulfill our project objectives the success of the project and then we would bring maybe that thing that could be needed to strengthen the Israeli-Arabic peace relations

JAN- 9-95 MON 12.28

SDSU FOUNDATION

FAX NO 619 582 9164

P 02

So I wish the best for realization of the project and by the way to send you my best wishes to your family and to Harry and his wife and for the rest of the team

APPENDIX F: Tomato Data From
Israeli Varieties Grown in Morocco

1161958246J1

MAR 18, 1989

12 37PM

P.02

trials with israeli tomatO CUI TIVARS
at AMARISDeterminate tomatoes

Fifteen lines of determinate tomatoes from Israeli breeders were supplied by Mr Moshe Bar and tested in the open field. The lines were M1-M10 and M20-M25. The cultivar M22 showed earliness, concentrated yield, large and uniform fruit.

Indeterminate Tomatoes

The following cultivars were planted during the winter of 1993-94 in a walk through tunnel for demonstration purposes: FA-144 (Daniella), FA190 (Graziella), FA-191 (Shirly), FA-175 (Nurit), FA-192, Madona and Diana. Following the demonstration, farmers who do not sterilize their soil ordered seedlings of the nematode-resistant cultivar called Madona. Farmers which export to countries requiring large fruits ordered the cultivar FA-191 (Shirly), and those exporting to countries that require small fruits ordered the cultivar FA-175 (Nurit). Farmers who plant early ordered the cultivars Diana and Madona.

FROM: KONICA FAX

TO 0768760016195824631

MAR 18, 1999 12 37PM P 07

2

ISRAELI TOMATO CULTIVARS PRODUCED IN AMARIS NURSERY

Indeterminate cultivars	Fruit Size	Seedlings Quantity
FA-144 Daniella -	Medium	2,000,000
FA-190 Graziella -	Medium	300,000
FA-191 Shirley-	Medium	30,000
FA-175 Nurit -	Small	15,000
FA-192	Large	30,000
Mmadona - Resistant to Root knot Nematode-	Large	100,000
Diana -	Medium	100,000
FA-184 Gabriella - Resistant to Root knot Nematode	Medium	100,000

ISRAELI MEI ON CULTIVARS PRODUCED IN AMARIS NURSERY

Galia	120,000
Arava	200,000
Gilat	300,000
Nurit	120,000
Revigal C-8 - Introduced to Morocco by the program	500,000

Seedlings were distributed to 30 growers from Laruche to Agadir